

TEXT SEARCH

=> d his 175

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(FILE 'HCAPLUS' ENTERED AT 13:10:01 ON 08 MAR 2010)
L75      32 S L72 OR L74
          SAV TEMP L75 HAN124HCPA/A

=> d que 175
L3      8586 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON (LI(L)CO(L)O)
          /ELS
L4      QUE SPE=ON ABB=ON PLU=ON A2/PG
L5      QUE SPE=ON ABB=ON PLU=ON B4/PG
L6      118 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON L3 AND L4
          AND L5
L9      31 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON L6 AND
          MG/ELS AND ZR/ELS
L11     1 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON 872-36-6/RN
L12     1 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON 77-77-0/RN
L16     1 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON "1, 4-BUTANEDI
          OL, 1, 4-DIMETHANESULFONATE"/CN
L17     32059 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON BATTERY(3A)ELE
          CTROLYTE
L18     54 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L9
L20     98972 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON BATTERY(3A) (SE
          CONDARY OR LITHIUM)
L22     123 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L6
L23     52 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L22 AND L17
L24     1602 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L11
L25     SEL PLU=ON L11 1- NAME : 5 TERMS
L26     1977 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L25
L27     2059 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L24 OR L26
L28     15 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L27 AND L23
L29     1165 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L12
L30     SEL PLU=ON L12 1- NAME : 8 TERMS
L31     3551 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L30
L32     3947 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L29 OR L31
L33     2849 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L16
L34     SEL PLU=ON L16 1- NAME : 37 TERMS
L35     3059 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L34
L36     3428 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L33 OR L35
L37     1 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L22 AND (L36
          OR L32)
L38     17 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L22 AND L27
L39     1 SEA FILE=REGISTRY SPE=ON ABB=ON PLU=ON 105-58-8/RN
L40     7146 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L39
L41     SEL PLU=ON L39 1- NAME : 9 TERMS
L42     40945 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L41
L43     41939 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L40 OR L42
L44     20 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L22 AND L43
L45     1 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L22 AND L32
L46     0 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L22 AND L36
L47     56 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L23 OR L28 OR
          L37 OR L38 OR (L44 OR L45 OR L46)
L49     QUE SPE=ON ABB=ON PLU=ON PY=<2005 NOT P/DT
L50     QUE SPE=ON ABB=ON PLU=ON (PY=<2005 OR PRY=<2005 OR
          AY=<2005 OR MY=<2005 OR REVIEW/DT) AND P/DT
L51     32 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L47 AND (L49
          OR L50)
L52     QUE SPE=ON ABB=ON PLU=ON BATTER? OR (ELECTROCHEM? O
          R ELECTROLY? OR GALVAN? OR WET OR DRY OR PRIMARY OR SEC
          ONDARY) (2A) (CELL OR CELLS)
L53     32 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L51 AND (L52
          OR L20)
L54     31 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L53 AND
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10/563,124-324074-EIC SEARCH

(ELECTROLYT? OR L17)  
L55 19 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L54 AND L18  
L56 31 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L54 OR L55  
L57 QUE SPE=ON ABB=ON PLU=ON ELECTROD? OR ELECTROD?(2A)  
(POSITIVE OR NEGATIVE) OR CATHOD? OR ANOD?  
L58 31 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L56 AND L57  
L59 QUE SPE=ON ABB=ON PLU=ON ACTIVE(3A) (MATERIAL OR SUB  
STANCE)  
L60 QUE SPE=ON ABB=ON PLU=ON NONAQUEOUS OR NON(A)AQUEOU  
S  
L61 QUE SPE=ON ABB=ON PLU=ON GROUP(2A) (II OR IV)  
L62 27 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L58 AND (L59  
OR L60 OR L61)  
L63 4 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L58 NOT L62  
L64 31 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L58 OR L62 OR  
L63  
L65 QUE SPE=ON ABB=ON PLU=ON ?PERCENT? OR .PERCENT. OR  
PER(W)CENT? OR PCT? OR RATIO# OR PROPORTION? OR PART  
L66 QUE SPE=ON ABB=ON PLU=ON MOL OR WEIGHT  
L67 1 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L53 NOT L64  
L68 32 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L64 OR L67  
L69 12 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L68 AND (L65  
OR L66)  
L70 32 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L68 OR L69  
L71 19 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L70 AND L18  
L72 32 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L70 OR L71  
L73 QUE SPE=ON ABB=ON PLU=ON VOLT OR VOLTAGE  
L74 4 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L72 AND L73  
L75 32 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L72 OR L74

TEXT SEARCH RESULTS

=> d 175 1-32 ibib ed abs hitstr hitind

L75 ANSWER 1 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2007:664302 HCAPLUS Full-text  
 DOCUMENT NUMBER: 147:55492  
 TITLE: Cathode active mass, its manufacture, cathodes, and secondary nonaqueous-electrolyte batteries  
 INVENTOR(S): Tatsumi, Koji; Amagasaki, Yukiko; Imafuku, Yoko  
 PATENT ASSIGNEE(S): Agc Seimi Chemical Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 13pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2007157596	A	20070621	JP 2005-353966	2005 1207 <--
PRIORITY APPLN. INFO.:			JP 2005-353966	2005 1207 <--

ED Entered STN: 21 Jun 2007

AB The title cathode mass contains Li, Co, and Zr, where 30-95 mol% the Zr is contained as Zr oxide to give 5-70 mol% Li mixed oxides. The cathode mass is manufactured by mixing raw materials and then firing, where the fired powders contain insol. components while bringing the powders into contact with 18% aqueous HCl solution at 225°. The insol. components contain 30-95 mol% of the Zr. The cathode is equipped with the active mass, a conductive material, and a binder. The secondary battery equipped with the cathode provides high capacity under high voltage and long cycle life.

IT 756879-33-1

RL: TEM (Technical or engineered material use); USES (Uses)  
 (zirconium-containing mixed oxide in manufacture of active mass for cathodes and secondary nonaq.-electrolyte batteries)

RN 756879-33-1 HCAPLUS

CN Aluminum cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component	Registry Number
O	x		17778-80-2
Zr	x		7440-67-7
Co	x		7440-48-4
Mg	x		7439-95-4
Li	x		7439-93-2
Al	x		7429-90-5

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST zirconium lithium mixed oxide cathode manuf

secondary nonaq battery

IT Secondary batteries

(lithium; zirconium-containing mixed oxide in manufacture of active mass for cathodes and secondary nonaq.-electrolyte batteries)

IT Battery cathodes

# 10/563,124-324074-EIC SEARCH

(zirconium-containing mixed oxide in manufacture of active mass for cathodes and secondary nonaq.-electrolyte batteries)

IT 1314-23-4, Zirconium oxide, uses 756879-33-1  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (zirconium-containing mixed oxide in manufacture of active mass for cathodes and secondary nonaq.-electrolyte batteries)

L75 ANSWER 2 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2007:117698 HCAPLUS Full-text  
 DOCUMENT NUMBER: 146:209722  
 TITLE: Battery  
 INVENTOR(S): Obana, Yoshiaki; Tokunaga, Takashi; Akashi, Hiroyuki  
 PATENT ASSIGNEE(S): Sony Corporation, Japan  
 SOURCE: U.S. Pat. Appl. Publ., 21pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20070026311	A1	20070201	US 2006-459514	2006 0724
JP 2007059379	A	20070308	JP 2006-141036	2006 0522
KR 2007015059	A	20070201	KR 2006-71264	2006 0728
CN 1917276	A	20070221	CN 2006-10136308	2006 0731
PRIORITY APPLN. INFO.:			JP 2005-222195	A 2005 0729
			JP 2006-141036	A 2006 0522

## ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 02 Feb 2007

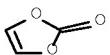
AB A battery capable of improving the charge and discharge efficiency even when the battery voltage is set to over 4.2 V is provided. A cathode and an anode are oppositely arranged with an electrolyte and a separator in between. The open circuit voltage in full charge is in the range from 4.25 V to 6.00 V. The cathode has a cathode current collector and a cathode active material layer provided on the cathode current collector. The cathode active material layer contains, as a binder, a polymer with intrinsic viscosity of 2.0 dL/g to 10 dL/g which contains vinylidene fluoride as an element.

IT 872-36-6, Vinylene carbonate  
868842-82-4

RL: TEM (Technical or engineered material use); USES (Uses)  
 (battery with cathode containing binder)

RN 872-36-6 HCAPLUS

CN 1,3-Dioxol-2-one (CA INDEX NAME)



RN 868842-82-4 HCAPLUS  
 CN Aluminum cobalt lithium magnesium zirconium oxide  
 (Al0.01Co0.97LiMg0.01Zr0.01O2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Zr	0.01	7440-67-7
Co	0.97	7440-48-4
Mg	0.01	7439-95-4
Li	1	7439-93-2
Al	0.01	7429-90-5

INCL 429217000; 429231300; 429223000; 429221000; 429231500; 429220000;  
 429229000; 429231600; 429338000  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST battery cathode  
 IT Battery cathodes  
 (battery with cathode containing binder)  
 IT Carbonaceous materials (technological products)  
 Fluoropolymers, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (battery with cathode containing binder)  
 IT Secondary batteries  
 (lithium; battery with cathode  
 containing binder)  
 IT 193215-53-1P, Cobalt lithium manganese nickel oxide  
 (Co0.2LiMn0.3Ni0.5O2) 372492-00-7P, Aluminum cobalt lithium  
 magnesium oxide (Al0.01Co0.98LiMg0.01O2)  
 RL: SPN (Synthetic preparation); TEM (Technical or engineered  
 material use); PREP (Preparation); USES (Uses)  
 (battery with cathode containing binder)  
 IT 872-36-6, Vinylene carbonate  
 9002-88-4, Polyethylene 9003-07-0, Polypropylene 24937-79-9,  
 Polyvinylidene fluoride 37323-13-0, Chromium cobalt  
 lithium oxide 104245-03-6, Cobalt lithium zinc  
 oxide 116713-67-8, Cobalt lithium titanium oxide  
 120479-28-9, Cobalt copper lithium oxide 131344-56-4,  
 Cobalt lithium nickel oxide 146956-50-5, Cobalt  
 lithium vanadium oxide 147683-99-6, Cobalt  
 lithium zirconium oxide 149087-95-6, Cobalt  
 lithium tin oxide 152654-50-7, Cobalt iron  
 lithium oxide 154838-53-6, Aluminum cobalt  
 lithium oxide 186298-15-7 186298-17-9 186298-22-6  
 187144-47-4, Calcium cobalt lithium oxide 187144-48-5,  
 Cobalt lithium magnesium oxide 214536-41-1, Cobalt  
 lithium manganese oxide 253875-52-4, Cobalt  
 lithium niobium oxide 253875-55-7, Cobalt  
 lithium strontium oxide 326895-11-8, Cobalt  
 lithium yttrium oxide 346417-97-8, Cobalt lithium  
 manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2) 350580-22-2,  
 Cobalt lithium tungsten oxide 382151-87-3, Boron  
 cobalt lithium oxide 478037-17-1 483965-60-2, Cobalt  
 gallium lithium oxide 656812-56-5, Cobalt  
 lithium molybdenum oxide 824957-50-8 824957-51-9  
 855998-69-5 855998-70-8 855998-71-9 855998-72-0  
 863498-38-8 864452-44-8 868842-82-4 897031-15-1  
 897031-16-2 897031-18-4 922733-62-8 922733-63-9

## 10/563,124-324074-EIC SEARCH

922733-64-0

RL: TEM (Technical or engineered material use); USES (Uses)  
 (battery with cathode containing binder)

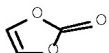
L75 ANSWER 3 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2006:1094429 HCAPLUS Full-text  
 DOCUMENT NUMBER: 145:401049  
 TITLE: Secondary batteries containing lithium tetrafluoroborate in nonaqueous electrolytes, and method for charging the batteries  
 INVENTOR(S): Tsutsumi, Shuji; Iwanaga, Masato; Oga, Keisuke; Nishida, Nobumichi  
 PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 14pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006286382	A	20061019	JP 2005-104283	2005 0331
<--				
JP 2005-104283				
2005 0331				
<--				

ED Entered STN: 20 Oct 2006  
 AB The batteries have cathode active mass with potential (based on Li) 4.4-4.6 V containing Zr- and Mg-containing LiCoO<sub>2</sub> and layered Li Mn Ni mixed oxides, and 0.05-1.5% (based on weight of nonaq. electrolytes) LiBF<sub>4</sub> in nonaq. electrolytes. The batteries show improved cycle efficiency and reduced swelling.  
 IT 642999-33-5P, Cobalt lithium magnesium zirconium oxide  
 RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)  
 (cathode active mass; secondary batteries containing lithium tetrafluoroborate in nonaq. electrolytes)  
 RN 642999-33-5 HCAPLUS  
 CN Cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component	
			Registry Number
<hr/>			
O	x		17778-80-2
Zr	x		7440-67-7
Co	x		7440-48-4
Mg	x		7439-95-4
Li	x		7439-93-2

IT 872-36-6, Vinylene carbonate  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
 (electrolyte additive; secondary batteries containing lithium tetrafluoroborate in nonaq. electrolytes)  
 RN 872-36-6 HCAPLUS  
 CN 1,3-Dioxol-2-one (CA INDEX NAME)



IT 105-58-8, Diethyl carbonate  
 RL: DEV (Device component use); USES (Uses)  
 (electrolyte; secondary batteries  
 containing lithium tetrafluoroborate in nonaq.  
 electrolytes)  
 RN 105-58-8 HCAPLUS  
 CN Carbonic acid, diethyl ester (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST nonaq electrolyte battery charging  
 cathode electrolyte; lithium  
 tetrafluoroborate nonaq electrolyte  
 battery; battery cathode cobalt  
 lithium magnesium zirconium oxide; cobalt lithium  
 manganese nickel oxide battery cathode  
 IT Secondary batteries  
 (lithium; secondary batteries  
 containing lithium tetrafluoroborate in nonaq.  
 electrolytes)  
 IT Battery cathodes  
 Battery electrolytes  
 (secondary batteries containing lithium  
 tetrafluoroborate in nonaq. electrolytes)  
 IT 532934-38-6P, Cobalt lithium manganese nickel oxide  
 (Co0.34LiMn0.33Ni0.33O2) 642999-33-5P, Cobalt lithium  
 magnesium zirconium oxide  
 RL: DEV (Device component use); IMF (Industrial manufacture); PREP  
 (Preparation); USES (Uses)  
 (cathode active mass; secondary  
 batteries containing lithium tetrafluoroborate in  
 nonaq. electrolytes)  
 IT 872-36-8, Vinylene carbonate  
 14283-07-9, Lithium tetrafluoroborate  
 RL: DEV (Device component use); MOA (Modifier or additive use);  
 USES (Uses)  
 (electrolyte additive; secondary  
 batteries containing lithium tetrafluoroborate in  
 nonaq. electrolytes)  
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl  
 carbonate 623-53-0, Methyl ethyl  
 carbonate 21324-40-3, Lithium  
 hexafluorophosphate  
 RL: DEV (Device component use); USES (Uses)  
 (electrolyte; secondary batteries  
 containing lithium tetrafluoroborate in nonaq.  
 electrolytes)

L75 ANSWER 4 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2006:1094404 HCAPLUS Full-text  
 DOCUMENT NUMBER: 145:401047  
 TITLE: Secondary nonaqueous  
 electrolyte batteries bonded  
 with pressure-sensitive adhesive tapes, and

## 10/563,124-324074-EIC SEARCH

INVENTOR(S): method for charging the batteries  
 Obayashi, Atsushi  
 PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 11pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006286337	A	20061019	JP 2005-103173	2005 0331
				<--
PRIORITY APPLN. INFO.: JP 2005-103173				2005 0331
				<--

ED Entered STN: 20 Oct 2006

AB The batteries have cathode active mass with potential (based on Li) 4.4-4.6 V containing (A) Zr- and Mg-containing Li Co mixed oxides and (B) layered Li Ni Mn mixed oxides, and pressure-sensitive adhesive tapes composed of substrate layers and rubber adhesive layers for protection, insulation, or prevention of unwinding of electrodes. The batteries have cathode active mass with improved thermal stability at high potential, and show improved safety and cycle efficiency.

IT 642999-33-5P, Cobalt lithium magnesium zirconium oxide

RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)  
 (cathode active mass; secondary  
 nonaq. electrolyte batteries bonded  
 with pressure-sensitive adhesive tapes)

RN 642999-33-5 HCAPLUS

CN Cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

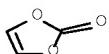
Component	Ratio	Component
		Registry Number
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2

IT 872-36-6, Vinylene carbonate

RL: DEV (Device component use); MOA (Modifier or additive use);  
 USES (Uses)  
 (electrolyte additive; secondary  
 nonaq. electrolyte batteries bonded  
 with pressure-sensitive adhesive tapes)

RN 872-36-6 HCAPLUS

CN 1,3-Dioxol-2-one (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST nonaq electrolyte battery charging  
 cathode adhesive tape; battery cathode  
 cobalt lithium magnesium zirconium oxide; cobalt

lithium manganese nickel oxide battery  
 cathode; pressure sensitive adhesive tape polypropylene  
 isoprene rubber battery  
 IT Secondary batteries  
     (lithium; secondary nonaq.  
     electrolyte batteries bonded with  
     pressure-sensitive adhesive tapes)  
 IT Isoprene rubber, uses  
   RL: DEV (Device component use); USES (Uses)  
     .pressure-sensitive adhesive; secondary nonaq  
     . electrolyte batteries bonded with  
     pressure-sensitive adhesive tapes)  
 IT Adhesive tapes  
     Battery cathodes  
     Battery electrolytes  
     (secondary nonaq. electrolyte  
     batteries bonded with pressure-sensitive adhesive  
     tapes)  
 IT 182442-95-1P, Cobalt lithium manganese nickel oxide  
 642999-33-8P, Cobalt lithium magnesium zirconium oxide  
   RL: DEV (Device component use); IMF (Industrial manufacture); PREP  
     (Preparation); USES (Uses)  
     (cathode active mass; secondary  
     nonaq. electrolyte batteries bonded  
     with pressure-sensitive adhesive tapes)  
 IT 872-36-6, Vinylene carbonate  
   RL: DEV (Device component use); MOA (Modifier or additive use);  
   USES (Uses)  
     (electrolyte additive; secondary  
     nonaq. electrolyte batteries bonded  
     with pressure-sensitive adhesive tapes)  
 IT 9003-31-0  
   RL: DEV (Device component use); USES (Uses)  
     (isoprene rubber, pressure-sensitive adhesive;  
     secondary nonaq. electrolyte  
     batteries bonded with pressure-sensitive adhesive  
     tapes)  
 IT 9003-07-0, Polypropylene  
   RL: DEV (Device component use); USES (Uses)  
     .pressure-sensitive adhesive tape substrate; secondary  
     nonaq. electrolyte batteries bonded  
     with pressure-sensitive adhesive tapes)

L75 ANSWER 5 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2006:1094402 HCAPLUS Full-text  
 DOCUMENT NUMBER: 145:401046  
 TITLE: Secondary nonaqueous  
       electrolyte batteries having  
       cathode active mass with controlled  
       size and shape, and method for charging the  
       batteries  
 INVENTOR(S): Inoue, Hidetoshi; Nishida, Nobumichi  
 PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 12pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2006286336	A	20061019	JP 2005-103172	2005 0331

PRIORITY APPLN. INFO.:

JP 2005-103172

2005  
0331

&lt;--

ED Entered STN: 20 Oct 2006

AB The batteries have cathode active mass with potential (based on Li) 4.4-4.6 V containing (A) Zr- and Mg-containing Li Co mixed oxides with average particle size (X) 7-30  $\mu\text{m}$ , and (B) layered Li Ni Mn mixed oxides having average particle size (Y) 2-15  $\mu\text{m}$  and aggregated spherical or elliptical shapes with ratio of minor axis/major axis 0.80-1.0, satisfying X/Y = 1.4-15. The batteries have cathode active mass with improved thermal stability at high potential, and show improved safety and cycle efficiency.

IT 642999-33-SP, Cobalt lithium magnesium zirconium oxide

RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)  
(cathode active mass; secondary nonaq. electrolyte batteries having cathode active mass with controlled size and shape)

RN 642999-33-5 HCAPLUS

CN Cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST nonaq electrolyte battery charging  
cathode size shape; battery cathode  
cobalt lithium magnesium zirconium oxide; cobalt  
lithium manganese nickel oxide battery  
cathodeIT Secondary batteries  
(lithium; secondary nonaq.  
electrolyte batteries having cathode  
active mass with controlled size and shape)IT Battery cathodes  
(secondary nonaq. electrolyte  
batteries having cathode active mass with  
controlled size and shape)IT 182442-95-1P, Cobalt lithium manganese nickel oxide  
642999-33-SP, Cobalt lithium magnesium zirconium oxide  
RL: DEV (Device component use); IMF (Industrial manufacture); PREP  
(Preparation); USES (Uses)  
(cathode active mass; secondary  
nonaq. electrolyte batteries having  
cathode active mass with controlled size and shape)

L75 ANSWER 6 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN

ACCESSION NUMBER: 2006:918270 HCAPLUS Full-text

DOCUMENT NUMBER: 145:274968

TITLE: Nonaqueous electrolyte  
secondary batteryINVENTOR(S): Iwanaga, Masato; Nishida, Nobumichi; Tsutsumi,  
Shuji

PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan

SOURCE: U.S. Pat. Appl. Publ., 9pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

## 10/563,124-324074-EIC SEARCH

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20060199077	A1	20060907	US 2006-359965	2006 0223
JP 2006236725	A	20060907	JP 2005-48171	2005 0224
KR 2006094477	A	20060829	KR 2006-17530	2006 0223
CN 1825675	A	20060830	CN 2006-10009554	2006 0224
CN 100539291	C	20090909	JP 2005-48171	A 2005 0224
PRIORITY APPLN. INFO.:				

## ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 08 Sep 2006

AB The invention concerns a non-aqueous electrolyte secondary battery with excellent discharge cycle characteristics and a charging termination potential ranging from 4.4 to 4.6 V based on lithium, consisting of a pos. electrode comprising a pos. electrode active material, a neg. electrode, and a non-aqueous electrolyte containing a non-aqueous solvent and an electrolyte salt, in which the pos. electrode active material comprises a mixture of a lithium-cobalt composite oxide containing at least both zirconium and magnesium in LiCoO<sub>2</sub>, and a lithium-manganese-nickel composite oxide having a layered structure and containing at least both manganese and nickel, and the potential of the pos. electrode active material ranges from 4.4 to 4.6 V based on lithium, and the non-aqueous electrolyte contains at least one of aromatic compds. selected from the group consisting at least of toluene derivs., anisole derivs., biphenyl, cyclohexyl benzene, tert-Bu benzene, tert-amyl benzene, and di-Ph ether.

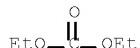
IT 105-58-8, Diethyl carbonate

642999-33-5, Cobalt lithium magnesium zirconium oxide

RL: DEV (Device component use); USES (Uses)  
(nonaq. electrolyte secondary  
battery)

RN 105-58-8 HCPLUS

CN Carbonic acid, diethyl ester (CA INDEX NAME)



RN 642999-33-5 HCPLUS

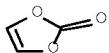
CN Cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component	
			Registry Number
O	x		17778-80-2
Zr	x		7440-67-7
Co	x		7440-48-4
Mg	x		7439-95-4
Li	x		7439-93-2

IT 872-36-5, Vinylene carbonate

## 10/563,124-324074-EIC SEARCH

RL: MOA (Modifier or additive use); USES (Uses)  
 (nonaq. electrolyte secondary  
 battery)  
 RN 872-36-6 HCAPLUS  
 CN 1,3-Dioxol-2-one (CA INDEX NAME)



INCL 429231300; 429231600; 429224000; 429223000; 429326000  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST nonaq electrolyte secondary  
 battery  
 IT Battery cathodes  
 Battery electrolytes  
 Secondary batteries  
 (nonaq. electrolyte secondary  
 battery)  
 IT Aromatic compounds  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (nonaq. electrolyte secondary  
 battery)  
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl  
 carbonate 623-53-0, Ethyl methyl carbonate  
 162684-16-4, Lithium manganese nickel oxide 182442-95-1, Cobalt  
 lithium manganese nickel oxide 532934-38-6, Cobalt lithium  
 manganese nickel oxide (Co0.34LiMn0.33Ni0.33O2)  
 642999-33-8, Cobalt lithium magnesium zirconium oxide  
 RL: DEV (Device component use); USES (Uses)  
 (nonaq. electrolyte secondary  
 battery)  
 IT 92-52-4, Biphenyl, uses 98-06-6, tert-Butylbenzene 100-66-3D,  
 Anisole, derivative 101-84-8, Diphenyl ether 108-88-3D, Toluene,  
 derivative 827-52-1, Cyclohexylbenzene 872-36-6,  
 Vinylene carbonate 2049-95-8, tert-Amylbenzene  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (nonaq. electrolyte secondary  
 battery)

L75 ANSWER 7 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2006:890059 HCAPLUS Full-text  
 DOCUMENT NUMBER: 145:274867  
 TITLE: Nonaqueous electrolyte  
 secondary battery  
 INVENTOR(S): Ooga, Keisuke; Iwanaga, Masato; Inomata,  
 Hideyuki; Ohshita, Ryuji  
 PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan  
 SOURCE: U.S. Pat. Appl. Publ., 6 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 20060194111	A1	20060831	US 2006-362225	
				2006
				0227
				<--
JP 2006244723	A	20060914	JP 2005-54381	

## 10/563,124-324074-EIC SEARCH

KR 2006095462	A	20060831	KR 2006-15179	2005 0228
				<-- 2006 0216
CN 1848511	A	20061018	CN 2006-10051464	2006 0228
				<-- 2006 0228
CN 100508272	C	20090701	JP 2005-54381	A 2005 0228
PRIORITY APPLN. INFO.:				<--

## ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 01 Sep 2006

AB A non-aqueous electrolyte

secondary cell excellent in cycle characteristics is provided. This purpose is achieved by the following structure. A non-aqueous electrolyte secondary cell has a pos. electrode having a pos. electrode active material, a neg. electrode having a neg. electrode active material, and a non-aqueous electrolyte having a non-aqueous solvent and an electrolytic salt. The pos. electrode active material has a lithium-cobalt compound oxide having added therein at least zirconium. The non-aqueous electrolyte has LiBF<sub>4</sub> at from 0.05 to 1.0 mass% of a total mass of the non-aqueous electrolyte and unsatd. cyclic carbonate at from 1.0 to 4.0 mass%. The true d. ratio of the pos. electrode is 0.72 or greater, the true d. ratio being represented by formula 1 shown below: (Formula 1) True d. ratio=active material apparent d. of electrode active material layer/true d. of active material.

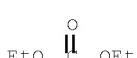
IT 105-58-8, Diethyl carbonate

872-36-6, Vinylene carbonate

RL: DEV (Device component use); USES (Uses)  
(nonaq. electrolyte secondary battery)

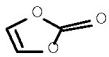
RN 105-58-8 HCPLUS

CN Carbonic acid, diethyl ester (CA INDEX NAME)



RN 872-36-6 HCPLUS

CN 1,3-Dioxol-2-one (CA INDEX NAME)



IT 642999-33-5P, Cobalt lithium magnesium zirconium oxide  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (nonaq. electrolyte secondary battery)

RN 642999-33-5 HCPLUS

CN Cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

Component | Ratio | Component

## 10/563,124-324074-EIC SEARCH

			Registry Number
O	x		17778-80-2
Zr	x		7440-67-7
Co	x		7440-48-4
Mg	x		7439-95-4
Li	x		7439-93-2
INCL	429231300; 429231600		
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology)		
ST	nonaq electrolyte secondary battery		
IT	Battery cathodes Secondary batteries (nonaq. electrolyte secondary battery)		
IT	Fluoropolymers, uses Styrene-butadiene rubber, uses RL: MOA (Modifier or additive use); USES (Uses) (nonaq. electrolyte secondary battery)		
IT	96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 623-53-0, Ethyl methyl carbonate 872-36-6, Vinylene carbonate 7429-90-5, Aluminum, uses 7782-42-5, Graphite, uses 7791-03-9 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 52627-24-4, Cobalt lithium oxide 90076-65-6 132843-44-8 RL: DEV (Device component use); USES (Uses) (nonaq. electrolyte secondary battery)		
IT	642999-33-5P, Cobalt lithium magnesium zirconium oxide RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses) (nonaq. electrolyte secondary battery)		
IT	98-06-6, tert-Butylbenzene 827-52-1, Cyclohexylbenzene 7439-95-4, Magnesium, uses 7440-44-0, Carbon, uses 7440-67-7, Zirconium, uses 9000-11-7, CMC 24937-79-9, Pvdf RL: MOA (Modifier or additive use); USES (Uses) (nonaq. electrolyte secondary battery)		
IT	9003-55-8 RL: MOA (Modifier or additive use); USES (Uses) (styrene-butadiene rubber; nonaq. electrolyte secondary battery)		

L75 ANSWER 8 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2006:889999 HCAPLUS Full-text  
 DOCUMENT NUMBER: 145:274866  
 TITLE: Charging method of nonaqueous  
electrolyte secondary  
battery  
 INVENTOR(S): Miyazaki, Shinya; Nishida, Nobumichi  
 PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan  
 SOURCE: U.S. Pat. Appl. Publ., 12pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 20060194110	A1	20060831	US 2006-355183	2006

## 10/563,124-324074-EIC SEARCH

				0216
JP 2006228651	A	20060831	JP 2005-43545	
				2005 0221
KR 2006093293	A	20060824	KR 2006-16118	
				2006 0220
CN 1825674	A	20060830	CN 2006-10008693	
				2006 0221
PRIORITY APPLN. INFO.:			JP 2005-43545	A
				2005 0221
				<--

## ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 01 Sep 2006

AB A non-aqueous electrolyte

secondary battery with excellent cycle characteristics and thermal stability in which the potential of the pos. electrode active material ranges from 4.4 V to 4.6 V based on lithium, and-charging method therefor are provided, wherein the pos. electrode active substance of a non-aqueous electrolyte secondary battery comprises a hexagonal system of lithium-containing transition metal composite oxide formed by adding zirconium, magnesium, and aluminum as foreign elements upon synthesis of lithium cobalt oxide, with zirconium content ranging from 0.01 to 1 mol%, magnesium content ranging from 0.01 to 3 mol%, and aluminum content ranging from 0.01 to 3 mol%, and an Li/Co molar ratio ranging from 1.00 to 1.05.

IT 105-58-8, Diethyl carbonate

RL: DEV (Device component use); USES (Uses)  
(charging method of nonaq. electrolyte  
secondary battery)

RN 105-58-8 HCPLUS

CN Carbonic acid, diethyl ester (CA INDEX NAME)



IT 756879-33-1P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(charging method of nonaq. electrolyte  
secondary battery)

RN 756879-33-1 HCPLUS

CN Aluminum cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

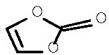
Component	Ratio	Component	
			Registry Number
<hr/>			
O	x		17778-80-2
Zr	x		7440-67-7
Co	x		7440-48-4
Mg	x		7439-95-4
Li	x		7439-93-2
Al	x		7429-90-5

IT 872-36-6, Vinylene carbonate

RL: MOA (Modifier or additive use); USES (Uses)  
(charging method of nonaq. electrolyte  
secondary battery)

## 10/563,124-324074-EIC SEARCH

RN 872-36-6 HCPLUS  
 CN 1,3-Dioxol-2-one (CA INDEX NAME)



INCL 429231300; 429050000  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 49  
 ST nonaq electrolyte secondary  
 battery charging method  
 IT Coprecipitation  
     Secondary batteries  
     (charging method of nonaq. electrolyte  
     secondary battery)  
 IT Carbonaceous materials (technological products)  
 RL: DEV (Device component use); USES (Uses)  
     (charging method of nonaq. electrolyte  
     secondary battery)  
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl  
 carbonate  
 RL: DEV (Device component use); USES (Uses)  
     (charging method of nonaq. electrolyte  
     secondary battery)  
 IT 756879-33-1P  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
 (Preparation); USES (Uses)  
     (charging method of nonaq. electrolyte  
     secondary battery)  
 IT 872-36-6, Vinylene carbonate  
 7429-90-5, Aluminum, uses 7439-95-4, Magnesium, uses  
 7440-67-7, Zirconium, uses  
 RL: MOA (Modifier or additive use); USES (Uses)  
     (charging method of nonaq. electrolyte  
     secondary battery)

L75 ANSWER 9 OF 32 HCPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2006:517317 HCPLUS Full-text  
 DOCUMENT NUMBER: 145:11312  
 TITLE: Method of charging nonaqueous  
 electrolyte secondary  
 battery  
 INVENTOR(S): Nishida, Nobumichi; Inoue, Hidetoshi  
 PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan  
 SOURCE: U.S. Pat. Appl. Publ., 7 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20060115733	A1	20060601	US 2005-288355	2005 1129
				<--
US 7438991	B2	20081021		
JP 2006156230	A	20060615	JP 2004-347187	2004 1130

## 10/563,124-324074-EIC SEARCH

KR 2006060559	A	20060605	KR 2005-100878	
				<-- 2005 1025
CN 1783548	A	20060607	CN 2005-10127178	
				<-- 2005 1130
CN 100553015	C	20091021	JP 2004-347187	
PRIORITY APPLN. INFO.:				<-- A 2004 1130

## ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 02 Jun 2006

AB The invention provides a non-aqueous electrolyte secondary cell that has high capacity and excels in cycle characteristics. The non-aqueous electrolyte secondary cell functions stably at a high potential of from 4.4 to 4.6 V with respect to lithium and inhibits the decomposition of the electrolytic solution at high potential. This is accomplished as follows. The non-aqueous electrolyte secondary cell has a pos. electrode having a pos. electrode active material; a neg. electrode having a neg. electrode active material; and a non-aqueous electrolyte having a non-aqueous solvent and electrolytic salt. The pos. electrode active material has: lithium cobalt compound oxide having added therein at least zirconium and magnesium; and lithium-nickel-manganese compound oxide having a layered structure. The pos. electrode active material has a potential of from 4.4 to 4.6 V with respect to lithium. The non-aqueous solvent contains di- Et carbonate of 10 volume% or higher at 25°.

IT 105-58-6, Diethyl carbonate  
642999-33-5, Cobalt lithium magnesium zirconium oxide  
RL: DEV (Device component use); USES (Uses)

(method of charging nonaq. electrolyte secondary battery)

RN 105-58-8 HCPLUS

CN Carbonic acid, diethyl ester (CA INDEX NAME)



RN 642999-33-5 HCPLUS

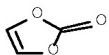
CN Cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2

IT 872-36-6, Vinylene carbonate  
RL: MOA (Modifier or additive use); USES (Uses)  
(method of charging nonaq. electrolyte secondary battery)

RN 872-36-6 HCPLUS

CN 1,3-Dioxol-2-one (CA INDEX NAME)



INCL 429231100; 429231300; 429326000; 429332000  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST nonaq electrolyte secondary  
 battery charging method  
 IT Battery anodes  
 Battery cathodes  
 Secondary batteries  
 (method of charging nonaq. electrolyte  
 secondary battery)  
 IT Carbonaceous materials (technological products)  
 RL: DEV (Device component use); USES (Uses)  
 (method of charging nonaq. electrolyte  
 secondary battery)  
 IT 887748-06-3, Cobalt manganese nickel hydroxide  
 (Co0.34Mn0.33Ni0.33(OH)2)  
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical  
 process); PROC (Process)  
 (method of charging nonaq. electrolyte  
 secondary battery)  
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl  
 carbonate 623-53-0, Ethyl methyl carbonate 7782-42-5,  
 Graphite, uses 147683-99-6, Cobalt lithium zirconium oxide  
 162684-16-4, Lithium manganese nickel oxide 642999-33-5  
 , Cobalt lithium magnesium zirconium oxide  
 RL: DEV (Device component use); USES (Uses)  
 (method of charging nonaq. electrolyte  
 secondary battery)  
 IT 872-36-8, Vinylene carbonate  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (method of charging nonaq. electrolyte  
 secondary battery)

L75 ANSWER 10 OF 32 HCPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2006:470248 HCPLUS Full-text  
 DOCUMENT NUMBER: 144:471465  
 TITLE: Nonaqueous electrolyte  
 secondary battery  
 INVENTOR(S): Tode, Shingo; Fujimoto, Hiroyuki; Takahashi,  
 Yasufumi; Kinoshita, Akira; Hasegawa,  
 Kazuhiro; Fujitani, Shin  
 PATENT ASSIGNEE(S): Sanyo Electric Co., Japan  
 SOURCE: U.S. Pat. Appl. Publ., 11 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20060105241	A1	20060518	US 2005-168380	2005 0629
US 7435510	B2	20081014		<--
JP 2006164934	A	20060622	JP 2005-60288	2005 0304
				<--

## 10/563,124-324074-EIC SEARCH

KR 2006048698	A	20060518	KR 2005-57003	
				2005 0629
<--				
CN 1773765	A	20060517	CN 2005-10080727	
				2005 0630
<--				
CN 100505406	C	20090624	JP 2004-329406	A
PRIORITY APPLN. INFO.:				2004 1112
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		JP 2005-60288	A	2005 0304
<--				

## ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 19 May 2006

AB A nonaq. electrolyte secondary battery comprises a pos. electrode containing a pos. active material, a neg. electrode containing a neg. active material and a nonaq. electrolyte, wherein a lithium transition metal complex oxide A formed by allowing LiCoO<sub>2</sub> to contain at least both of Zr and Mg and a lithium transition metal complex oxide B having a layered structure and containing at least both of Mn and Ni as transition metals and containing Mo are mixed and used as the pos. active material.

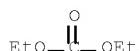
IT 105-58-8, Diethyl carbonate

756879-33-1 886752-61-0 886752-62-1

RL: DEV (Device component use); USES (Uses)  
(nonaq. electrolyte secondary  
battery)

RN 105-58-8 HCPLUS

CN Carbonic acid, diethyl ester (CA INDEX NAME)



RN 756879-33-1 HCPLUS

CN Aluminum cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component	
			Registry Number
O	x		17778-80-2
Zr	x		7440-67-7
Co	x		7440-48-4
Mg	x		7439-95-4
Li	x		7439-93-2
Al	x		7429-90-5

RN 886752-61-0 HCPLUS

CN Cobalt lithium magnesium titanium zirconium oxide (CA INDEX NAME)

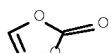
Component	Ratio	Component	
			Registry Number
O	x		17778-80-2
Zr	x		7440-67-7
Co	x		7440-48-4
Ti	x		7440-32-6
Mg	x		7439-95-4
Li	x		7439-93-2

RN 886752-62-1 HCAPLUS  
 CN Cobalt lithium magnesium tin zirconium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Sn	x	7440-31-5
Mg	x	7439-95-4
Li	x	7439-93-2

IT 872-36-6, Vinylene carbonate  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (nonaq. electrolyte secondary  
 battery)

RN 872-36-6 HCAPLUS  
 CN 1,3-Dioxol-2-one (CA INDEX NAME)



INCL 429231300; 429231600; 429223000; 429224000  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST nonaq electrolyte secondary  
 battery  
 IT Transition metal oxides  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
 (Preparation); USES (Uses)  
 (lithiated; nonaq. electrolyte  
 secondary battery)  
 IT Secondary batteries  
 (lithium; nonaq. electrolyte  
 secondary battery)  
 IT Battery cathodes  
 (nonaq. electrolyte secondary  
 battery)  
 IT 477700-15-5P, Cobalt lithium oxide (Co0.99LiO2)  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
 (Preparation); USES (Uses)  
 (Mg- and Zr-doped; nonaq. electrolyte  
 secondary battery)  
 IT 372492-00-7P, Aluminum cobalt lithium magnesium oxide  
 (Al0.01Co0.98LiMg0.01O2)  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
 (Preparation); USES (Uses)  
 (Zr-doped; nonaq. electrolyte  
 secondary battery)  
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl  
 carbonate 623-53-0, Ethyl methyl carbonate  
 756879-33-1 864452-44-8 886752-61-0  
 886752-62-1  
 RL: DEV (Device component use); USES (Uses)  
 (nonaq. electrolyte secondary  
 battery)  
 IT 886752-63-2P  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
 (Preparation); USES (Uses)  
 (nonaq. electrolyte secondary  
 battery)  
 IT 872-36-6, Vinylene carbonate

# 10/563,124-324074-EIC SEARCH

7439-95-4, Magnesium, uses 7440-67-7, Zirconium, uses  
 532934-38-6, Cobalt lithium manganese nickel oxide  
 (Co0.34LiMn0.33Ni0.33O2)  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (nonaq. electrolyte secondary  
 battery)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE  
 THIS RECORD (2 CITINGS)  
 REFERENCE COUNT: 30 THERE ARE 30 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

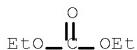
L75 ANSWER 11 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2005:1262422 HCAPLUS Full-text  
 DOCUMENT NUMBER: 143:480471  
 TITLE: Nonaqueous electrolyte  
 secondary battery  
 INVENTOR(S): Kitao, Hideki; Fujihara, Toyoki; Takeda,  
 Kazuhisa; Nakanishi, Naoya; Nohma, Toshiyuki  
 PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan  
 SOURCE: U.S. Pat. Appl. Publ., 6 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20050266313	A1	20051201	US 2005-138268	2005 0527
US 7452631	B2	20081118		<--
JP 2005340055	A	20051208	JP 2004-158780	2004 0528
CN 1702905	A	20051130	CN 2005-10074304	2005 0525
CN 100502133	C	20090617		<--
KR 2006048132	A	20060518	KR 2005-44816	2005 0527
PRIORITY APPLN. INFO.:			JP 2004-158780	A 2004 0528

## ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 02 Dec 2005  
 AB In a non-aqueous electrolyte  
 secondary battery using a layered lithium-transition metal composite oxide as a pos .  
 electrode active material,  
 elevated-temperature durability, i.e., elevated-temperature storage performance is  
 enhanced without degrading battery capacity. The non-aqueous electrolyte secondary  
 battery includes: a pos. electrode including, as a pos. electrode active material,  
 layered lithium-transition metal composite oxide containing lithium, nickel, and  
 manganese; a neg. electrode active material capable of intercalating and  
 deintercalating lithium; and a non-aqueous electrolyte having lithium ion conductivity,  
 and the lithium-transition metal composite oxide contains a group IVA element and a  
 group IIIA element of the periodic table.  
 IT IGS-58-8, Diethyl carbonate  
 RL: DEV (Device component use); USES (Uses)

(nonaq. electrolyte secondary  
battery)  
RN 105-58-8 HCPLUS  
CN Carbonic acid, diethyl ester (CA INDEX NAME)



IT 869792-63-2P  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)  
(nonaq. electrolyte secondary  
battery)  
RN 869792-63-2 HCPLUS  
CN Cobalt lithium magnesium manganese nickel zirconium oxide (CA  
INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Ni	x	7440-02-0
Mn	x	7439-96-5
Mg	x	7439-95-4
Li	x	7439-93-2

IC ICM H01M004-52  
ICS H01M004-50  
INCL 429231100; 429223000; 429224000; 429231500; 429231600; 429231300  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 49  
ST nonaq electrolyte secondary  
battery  
IT Secondary batteries  
(lithium; nonaq. electrolyte  
secondary battery)  
IT Battery cathodes  
(nonsq. electrolyte secondary  
battery)  
IT 217309-43-8P, Cobalt lithium manganese nickel oxide  
(Co0.3LiMn0.3Ni0.4O2)  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)  
(Mn- and Zr-doped; nonaq. electrolyte  
secondary battery)  
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl  
carbonate 7782-42-5, Graphite, uses 21324-40-3,  
Lithium hexafluorophosphate 362666-83-9, Aluminum lithium  
manganese oxide (Al0.1Li1.1Mn1.8O4)  
RL: DEV (Device component use); USES (Uses)  
(nonaq. electrolyte secondary  
battery)  
IT 869792-63-2P  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)  
(nonaq. electrolyte secondary  
battery)  
IT 7439-96-5, Manganese, uses 7440-67-7, Zirconium, uses  
RL: MOA (Modifier or additive use); USES (Uses)  
(nonaq. electrolyte secondary

# 10/563,124-324074-EIC SEARCH

battery)  
 REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L75 ANSWER 12 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2005:1102902 HCAPLUS Full-text  
 DOCUMENT NUMBER: 143:329274  
 TITLE: Secondary nonaqueous  
 electrolyte battery  
 INVENTOR(S): Abe, Hiroshi; Miyoshi, Kazuhiro; Takahashi,  
 Yasufumi; Fujimoto, Hiroyuki; Kinoshita,  
 Akira; Toide, Shingo; Nakane, Ikuro; Fujitani,  
 Shin  
 PATENT ASSIGNEE(S): Ube Industries, Ltd., Japan; Sanyo Electric  
 Co., Ltd.  
 SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005285630	A	20051013	JP 2004-99430	2004 0330
JP 4291195	B2	20090708		<--
CA 2525923	A1	20050930	CA 2005-2525923	2005 0218
WO 2005099021	A1	20051020	WO 2005-JP2576	2005 0218
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				<--
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CN 1806361	A	20060719	CN 2005-80000453	2005 0218
CN 100544108	C	20090923		<--
EP 1739783	A1	20070103	EP 2005-710409	2005 0218
R: DE, FR, GB				<--
US 20060166096	A1	20060727	US 2006-563124	2006 0103
KR 2007004796	A	20070109	KR 2006-720316	2006

0929

PRIORITY APPLN. INFO.:	JP 2004-99430	A
	2004	2004
	0330	0330
	<--	
	WO 2005-JP2576	W
	2005	2005
	0218	0218
	<--	

## ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 14 Oct 2005

AB The battery has a graphite anode, a LiCoO<sub>2</sub> based cathode, and a nonaq. electrolyte solution; where the LiCoO<sub>2</sub> contains Group IIA and Group IVA elements, and the electrolyte solution contains 0.2-1.5% of a compound having sulfonyl group.

IT 77-77-0, Divinyl sulfone

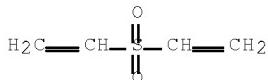
105-58-8, Diethyl carbonate

872-36-6, Vinylene carbonate

RL: DEV (Device component use); USES (Uses)  
(electrolyte solns. containing sulfonyl compound for  
secondary lithium batteries)

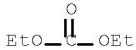
RN 77-77-0 HCAPLUS

CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)



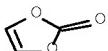
RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (CA INDEX NAME)



RN 872-36-6 HCAPLUS

CN 1,3-Dioxol-2-one (CA INDEX NAME)



IT 642999-33-5, Cobalt lithium magnesium zirconium oxide

RL: DEV (Device component use); USES (Uses)  
(magnesium and zirconium containing lithium cobaltate  
cathodes for secondary lithium  
batteries)

RN 642999-33-5 HCAPLUS

CN Cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component	Registry Number
=====+=====+=====+=====			
O	x		17778-80-2
Zr	x		7440-67-7
Co	x		7440-48-4

Mg		x		7439-95-4
Li		x		7439-93-2
IC	ICM	H01M010-40		
	ICS	H01M004-02; H01M004-58		
CC	52-2	(Electrochemical, Radiational, and Thermal Energy Technology)		
ST	battery cathode lithium cobalt zinc			
	magnesium oxide; sulfonyl compd electrolyte soln			
	secondary lithium battery			
IT	Battery electrolytes			
	(electrolyte solns. containing sulfonyl compound for			
	secondary lithium batteries)			
IT	Secondary batteries			
	(lithium; secondary lithium			
	batteries with magnesium and zirconium containing lithium			
	cobaltate cathodes and sulfonyl compound containing			
	electrolyte solns.)			
IT	Battery cathodes			
	(magnesium and zirconium containing lithium cobaltate			
	cathodes for secondary lithium			
	batteries)			
IT	77-77-0, Divinyl sulfone 96-49-1,			
	Ethylene carbonate 105-58-8, Diethyl			
	carbonate 872-36-6, Vinylene			
	carbonate 21324-40-3, Lithium hexafluorophosphate			
	433304-54-2			
	RL: DEV (Device component use); USES (Uses)			
	(electrolyte solns. containing sulfonyl compound for			
	secondary lithium batteries)			
IT	642999-33-5, Cobalt lithium magnesium zirconium oxide			
	RL: DEV (Device component use); USES (Uses)			
	(magnesium and zirconium containing lithium cobaltate			
	cathodes for secondary lithium			
	batteries)			

L75 ANSWER 13 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2005:985067 HCAPLUS Full-text  
 DOCUMENT NUMBER: 143:251104  
 TITLE: Secondary nonaqueous-  
       electrolyte battery with  
       excellent cycling performance  
 INVENTOR(S): Chiga, Takanobu; Yanagida, Katsunori; Yanai,  
                  Atsushi; Kita, Yoshinori  
 PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005243301	A	20050908	JP 2004-48591	2004 0224
US 20050196674	A1	20050908	US 2005-64112	2005 0223
US 7335446	B2	20080226	JP 2004-48591	A 2004 0224
PRIORITY APPLN. INFO.:				<--

## 10/563,124-324074-EIC SEARCH

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 09 Sep 2005

AB In the battery, the cathode active mass is a transition metal oxide with layered structure containing Li, Co, Group IVB element, and Group IIB element, and at least part of the oxide is covered with a phosphate compound represented by M<sub>1</sub>PO<sub>k</sub> (M<sub>1</sub> = 3-valent element; k = 2-4). The battery has excellent cycle performance without lowering of initial charge/discharge efficiency.

IT 253868-42-7 Cobalt lithium magnesium titanium oxide

678158-98-0 Cobalt hafnium lithium magnesium oxide

RL: DEV (Device component use); USES (Uses)  
 (nonaq.-electrolyte battery using  
 phosphate-coated layered oxide containing Li, Co, Group IVB  
 element, and Group IIB element as cathode active  
 mass)

RN 253868-42-7 HCPLUS

CN Cobalt lithium magnesium titanium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Co	x	7440-48-4
Ti	x	7440-32-6
Mg	x	7439-95-4
Li	x	7439-93-2

RN 678158-98-0 HCPLUS

CN Cobalt hafnium lithium magnesium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Hf	x	7440-58-6
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2

IT 642999-33-55P Cobalt lithium magnesium zirconium oxide

RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)

(nonaq.-electrolyte battery using  
 phosphate-coated layered oxide containing Li, Co, Group IVB  
 element, and Group IIB element as cathode active  
 mass)

RN 642999-33-5 HCPLUS

CN Cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2

IC ICM H01M004-58

ICS H01M004-02; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST layered lithium cobalt oxide Group IVB IIB element cathode

; lithium cobalt oxide phosphate coating battery

cathode; nonaq electrolyte

battery cathode active mass cycling performance

IT Battery cathodes

(nonaq.-electrolyte battery using

phosphate-coated layered oxide containing Li, Co, Group IVB

10/563,124-324074-EIC SEARCH

element, and Group IIB element as cathode active mass)  
IT 13765-96-3, Cerium phosphate 13778-59-1, Lanthanum phosphate  
13990-54-0, Yttrium phosphate 253868-42-7, Cobalt  
lithium magnesium titanium oxide 678158-98-0, Cobalt  
hafnium lithium magnesium oxide  
RL: DEV (Device component use); USES (Uses)  
(nonaq.-electrolyte battery using  
phosphate-coated layered oxide containing Li, Co, Group IVB  
element, and Group IIB element as cathode active  
mass)  
IT 7784-30-7P, Aluminum phosphate 642999-33-5P, Cobalt  
lithium magnesium zirconium oxide  
RL: DEV (Device component use); IMF (Industrial manufacture); PREP  
(Preparation); USES (Uses)  
(nonaq.-electrolyte battery using  
phosphate-coated layered oxide containing Li, Co, Group IVB  
element, and Group IIB element as cathode active  
mass)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE  
THIS RECORD (2 CITINGS)

L75 ANSWER 14 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
ACCESSION NUMBER: 2005:726431 HCAPLUS Full-text  
DOCUMENT NUMBER: 143:176285  
TITLE: Nonaqueous electrolyte  
secondary lithium  
batteries with excellent charge  
storage  
INVENTOR(S): Yanai, Atsushi; Yanagida, Katsunori; Kita,  
Yoshinori; Noma, Toshiyuki  
PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 16 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2005216795	A	20050811	JP 2004-25189	2004 0202
				<--
PRIORITY APPLN. INFO.:			JP 2004-25189	2004 0202
				<--

ED Entered STN: 11 Aug 2005  
AB The batteries comprise a Li-intercalating anode with active materials having BET surface area of  $\leq 5.0 \text{ m}^2/\text{g}$ , a Li-containing transition metal oxide cathode, and nonaq. electrolytes with their solvents containing  $\geq 50$  volume%  $\gamma$ -butyrolactone and are characterized by the value of the depth of discharge (DOD) showing min.  $dV/d(DOD)$  ( $V =$  battery voltage on 5-h rate discharging; DOD = 10-80%;  $dV/d(DOD) < -0.015$ ) ( $R$ ) being 10-16.8% of DOD. Preferably, the cathode active material is Li-containing Co oxides or contain  $\geq 1$  element(s) selected from Groups 2, 4, 7, 8, 9, 10, 12, 13, and 14 elements. Cathode side reaction is prevented under the given DOD conditions.  
IT 642999-33-5P, Cobalt lithium magnesium zirconium oxide  
RL: DEV (Device component use); IMF (Industrial manufacture); PREP  
(Preparation); USES (Uses)  
(cathode active material;  
nonaq.  $\gamma$ -butyrolactone electrolyte  
secondary lithium batteries with  
excellent charge storage)

RN 642999-33-5 HCAPLUS  
 CN Cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2

- IC ICM H01M010-40  
 ICS H01M004-02; H01M004-58  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST nonaq electrolyte secondary  
 lithium battery charge storage high;  
 butyrolactone nonaq electrolyte solvent  
 secondary lithium battery; cobalt  
 lithium oxide cathode secondary  
 lithium battery  
 IT Transition metal oxides  
 RL: DEV (Device component use); USES (Uses)  
 (cathode active materials containing;  
 nonaq.  $\gamma$ -butyrolactone electrolyte  
 secondary lithium batteries with  
 excellent charge storage)  
 IT Secondary batteries  
 (lithium; nonaq.  $\gamma$ -butyrolactone  
 electrolyte secondary lithium  
 batteries with excellent charge storage)  
 IT Battery cathodes  
 (nonaq.  $\gamma$ -butyrolactone electrolyte  
 secondary lithium batteries with  
 excellent charge storage)  
 IT Group VIIIB element compounds  
 RL: DEV (Device component use); USES (Uses)  
 (oxides, transition metal oxide cathode  
 active materials containing; nonaq.  
 $\gamma$ -butyrolactone electrolyte secondary  
 lithium batteries with excellent charge  
 storage)  
 IT Alkaline earth oxides  
 Group IIB element oxides  
 Group IIIA element oxides  
 Group IVA element oxides  
 Group IVB element oxides  
 Group VIII element oxides  
 RL: DEV (Device component use); USES (Uses)  
 (transition metal oxide cathode active  
 materials containing; nonaq.  
 $\gamma$ -butyrolactone electrolyte secondary  
 lithium batteries with excellent charge  
 storage)  
 IT 52627-24-4P, Cobalt lithium oxide 149087-95-6P, Cobalt lithium  
 tin oxide 642999-33-5P, Cobalt lithium magnesium  
 zirconium oxide  
 RL: DEV (Device component use); IMF (Industrial manufacture); PREP  
 (Preparation); USES (Uses)  
 (cathode active material;  
 nonaq.  $\gamma$ -butyrolactone electrolyte  
 secondary lithium batteries with  
 excellent charge storage)  
 IT 14283-07-9, Lithium tetrafluoroborate  
 RL: DEV (Device component use); USES (Uses)  
 (electrolyte; nonaq.  $\gamma$ -butyrolactone

electrolyte secondary lithium  
batteries with excellent charge storage)  
 IT 96-49-1, Ethylene carbonate  
 RL: DEV (Device component use); USES (Uses)  
 (solvent with  $\gamma$ -butyrolactone; nonaq.  
 $\gamma$ -butyrolactone electrolyte secondary  
lithium batteries with excellent charge  
storage)  
 IT 96-48-0,  $\gamma$ -Butyrolactone  
 RL: DEV (Device component use); USES (Uses)  
 (solvent; nonaq.  $\gamma$ -butyrolactone  
electrolyte secondary lithium  
batteries with excellent charge storage)

L75 ANSWER 15 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2005:497042 HCAPLUS Full-text  
 DOCUMENT NUMBER: 143:29515  
 TITLE: Secondary nonaqueous  
electrolyte battery  
 INVENTOR(S): Nishimura, Makiko; Takeuchi, Takashi;  
Nagasaki, Akira; Takagi, Suguru  
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd.,  
Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 20 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005149959	A	20050609	JP 2003-387180	2003 1117 ---
PRIORITY APPLN. INFO.: JP 2003-387180 2003 1117 ---				

ED Entered STN: 10 Jun 2005  
 AB The battery has a cathode active mass-containing cathode; an anode active mass-containing anode, and a nonaq. electrolyte solution; where the cathode active mass comprises Li Co composite oxide particles and the electrolyte solution contains LiPF6 and LiBF4 as electrolyte salt; where the oxide furthermore contains  $\geq$ 1 M1 element selected from Mg, Cu and Zn and  $\geq$ 1 M2 element selected from Al, Ca, Ba, Sr, Y and Zr; The M1 element is evenly distributed in the oxide particles, and the M2 element is distributed more in the surface than inside of the oxide particles.

IT 642999-33-5, Cobalt lithium magnesium zirconium oxide  
 RL: DEV (Device component use); USES (Uses)  
 (cathodes containing lithium cobalt composite oxides and  
electrolytes containing LiPF6 and LiBF4 for  
secondary lithium batteries)

RN 642999-33-5 HCAPLUS  
 CN Cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
<hr/>		
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2

10/563,124-324074-EIC SEARCH

IC ICM H01M010-40  
 ICS H01M004-02; H01M004-58; C01G051-00  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST secondary battery cathode  
 Lithium cobalt composite oxide; battery  
 electrolyte lithium hexafluorophosphate  
 lithium tetrafluoroborate  
 IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate  
 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium  
 hexafluorophosphate 642999-33-8, Cobalt lithium  
 magnesium zirconium oxide 642999-49-3, Aluminum cobalt lithium  
 magnesium oxide 721430-98-4, Cobalt lithium magnesium strontium  
 oxide 721430-99-5, Calcium cobalt lithium magnesium oxide  
 852995-92-7, Barium cobalt lithium magnesium oxide 852995-93-8,  
 Cobalt lithium magnesium yttrium oxide 852995-94-9, Aluminum  
 cobalt copper lithium oxide 852995-95-0, Aluminum cobalt lithium  
 zinc oxide  
 RL: DEV (Device component use); USES (Uses)  
 (cathodes containing lithium cobalt composite oxides and  
 electrolytes containing LiPF<sub>6</sub> and LiBF<sub>4</sub> for  
 secondary lithium batteries)

L75 ANSWER 16 OF 32 HCPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2005:451706 HCPLUS Full-text  
 DOCUMENT NUMBER: 143:10533  
 TITLE: Secondary nonaqueous  
 electrolyte battery  
 INVENTOR(S): Takeuchi, Takashi; Nagasaki, Akira; Yoshizawa,  
 Hiroshi  
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd.,  
 Japan  
 SOURCE: PCT Int. Appl., 57 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2005048380	A1	20050526	WO 2004-JP16653	2004 1110
<--				
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CN 1875505	A	20061206	CN 2004-80032047	2004 1110
<--				
CN 100495774	C	20090603		
US 20080248392	A1	20081009	US 2006-572590	2006 0320
<--				
KR 2006066125	A	20060615	KR 2006-707766	

2006  
0421

KR 789081 PRIORITY APPLN. INFO.:	B1 20071226	JP 2003-387160 <-- WO 2004-JP16653 <--	A 2003 1117 W 2004 1110 <--
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## ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 27 May 2005

AB The battery has a separator between a cathode and an anode and an electrolyte solution; where the cathode contains a cathode active mass, comprising a Li composite oxide:  $LixMe1-y-zMyLzO2$  [Me = transition metal element(s) excluding Ti, Mn, Y, and Zr; M = Mg, Ti, Mn, and/or Zn; L = Al, Ca, Ba, Sr, Y, and/or Zr; x = 1-1.05; y = 0.005-0.1 (but y = 0.005-0.5 when M is Mn); and z = 0-0.05]; and the separator consists of a stack of single-layer films, having a fine porous structure; where the single-layer film facing the cathode is made of polypropylene.

IT 852333-28-9, Cobalt lithium magnesium zirconium oxide  
(Co0.94LiMg0.05Zr0.01O2)

RL: DEV (Device component use); USES (Uses)  
(cathodes containing lithium composite oxides and  
separators containing polypropylene for secondary  
lithium batteries)

RN 852333-28-9 HCPLUS

CN Cobalt lithium magnesium zirconium oxide (Co0.94LiMg0.05Zr0.01O2)  
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Zr	0.01	7440-67-7
Co	0.94	7440-48-4
Mg	0.05	7439-95-4
Li	1	7439-93-2

IC ICM H01M004-48

ICS H01M004-58; H01M004-02; H01M010-40; H01M002-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary battery cathode  
lithium composite oxide; battery separator  
single layer film stack polyethylene

IT Battery cathodes

Secondary battery separators  
(cathodes containing lithium composite oxides  
and separators containing polypropylene for secondary  
lithium batteries)

IT Secondary batteries

(lithium; cathodes containing lithium  
composite oxides and separators containing polypropylene for  
secondary lithium batteries)

IT 7782-42-5, Graphite, uses 9002-88-4, Polyethylene 9003-07-0,  
Polypropylene 144419-56-7, Cobalt lithium magnesium oxide  
(Co0.95LiMg0.05O2) 345664-05-3, Aluminum cobalt lithium oxide  
(Al0.01Co0.99LiO2) 372491-81-1, Aluminum cobalt lithium  
magnesium oxide (Al0.1Co0.89LiMg0.01O2) 372491-82-2, Aluminum  
cobalt lithium magnesium oxide (Al0.01Co0.96LiMg0.03O2)  
372491-83-3, Aluminum cobalt lithium magnesium oxide  
(Al0.01Co0.94LiMg0.05O2) 372492-00-7, Aluminum cobalt lithium  
magnesium oxide (Al0.01Co0.98LiMg0.01O2) 478814-69-6, Aluminum  
cobalt lithium magnesium oxide (Al0.05Co0.9LiMg0.05O2)  
489431-33-6, Aluminum cobalt lithium oxide (Al0.01Co0.98LiO2)  
721448-53-9, Cobalt lithium magnesium oxide (Co0.94LiMg0.05O2)

10/563,124-324074-EIC SEARCH

852333-25-6, Aluminum cobalt lithium magnesium oxide  
 (Al0.1Co0.85LiMg0.05O2) 852333-26-7, Aluminum cobalt lithium  
 magnesium oxide (Al0.2Co0.79LiMg0.01O2) 852333-27-8, Cobalt  
 lithium magnesium strontium oxide (Co0.94LiMg0.05Sr0.01O2)  
 852333-28-9, Cobalt lithium magnesium zirconium oxide  
 (Co0.94LiMg0.05Zr0.01O2) 852333-29-0, Calcium cobalt lithium  
 magnesium oxide (Ca0.01Co0.94LiMg0.05O2) 852333-31-4, Barium  
 cobalt lithium magnesium oxide (Ba0.01Co0.94LiMg0.05O2)  
 852333-33-6, Cobalt lithium magnesium yttrium oxide  
 (Co0.94LiMg0.05Y0.01O2) 852333-35-8, Aluminum cobalt lithium  
 titanium oxide (Al0.01Co0.94LiTi0.05O2) 852333-37-0, Aluminum  
 cobalt lithium zinc oxide (Al0.01Co0.94LiZn0.05O2) 852333-38-1,  
 Aluminum cobalt lithium manganese oxide (Al0.01Co0.94LiMn0.05O2)  
 852333-39-2, Aluminum cobalt lithium magnesium oxide  
 (Al0.03Co0.92LiMg0.05O2) 852333-41-6, Aluminum cobalt lithium  
 magnesium oxide (Al0.01Co0.91LiMg0.08O2) 852333-42-7, Aluminum  
 cobalt lithium magnesium oxide (Al0.01Co0.84LiMg0.15O2)  
 852333-43-8, Aluminum cobalt lithium magnesium oxide  
 (Al0.05Co0.89LiMg0.06O2)  
 RL: DEV (Device component use); USES (Uses)  
 (cathodes containing lithium composite oxides and  
 separators containing polypropylene for secondary  
 lithium batteries)

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L75 ANSWER 17 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2004:796473 HCAPLUS Full-text  
 DOCUMENT NUMBER: 141:263471  
 TITLE: Cathode active  
 material for nonaqueous  
 electrolyte secondary  
 battery  
 INVENTOR(S): Takahashi, Takeshi; Oba, Takeshi; Fujino,  
 Kenji; Tokuno, Junichi; Morizaki, Masuhiro;  
 Kondo, Takeyuki; Seyama, Jun  
 PATENT ASSIGNEE(S): Nichia Corporation, Japan  
 SOURCE: Eur. Pat. Appl., 54 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1463132	A2	20040929	EP 2004-7076	2004 0324
EP 1463132	A3	20090401		<--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK				
JP 2005050712	A	20050224	JP 2003-282341	2003 0730
JP 2005123111	A	20050512	JP 2003-358885	2003 1020
JP 2005190900	A	20050714	JP 2003-432856	2003 1226

## 10/563,124-324074-EIC SEARCH

JP 2004311408	A	20041104	JP 2004-42699	
				<-- 2004 0219
TW 286849	B	20070911	TW 2004-93105565	
				<-- 2004 0303
KR 2004084643	A	20041006	KR 2004-17292	
				<-- 2004 0315
US 20040229123	A1	20041118	US 2004-806206	
				<-- 2004 0323
CN 1532966	A	20040929	CN 2004-10007990	
				<-- 2004 0325
CN 100355125	C	20071212		<--
PRIORITY APPLN. INFO.:			JP 2003-83806	A
				<-- 2003 0325
			JP 2003-282341	A
				<-- 2003 0730
			JP 2003-358885	A
				<-- 2003 1020
			JP 2003-432856	A
				<-- 2003 1226
				<--

ED Entered STN: 30 Sep 2004

AB Disclosed is a pos. electrode active material for a nonaq. electrolyte secondary battery having at least a lithium-transition metal composite oxide of a layer structure, in which an existence ratio of at least one selected from the group consisting of elements which may become tetravalent and magnesium is 20% or more on a surface of the lithium-transition metal composite oxide. By use of this pos. electrode active material, a nonaq. electrolyte secondary

battery having excellent battery characteristics, specifically, having excellent high rate characteristics, cycle characteristics, low-temperature characteristics, thermal stability, and the like, under the even more harsh environment for use can be realized.

IT 642999-33-5P, Cobalt lithium magnesium zirconium oxide  
756879-33-1PRL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(cathode active material for  
nonaq. electrolyte secondary  
battery)

RN 642999-33-5 HCPLUS

CN Cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component	
		Registry Number	
O	x		17778-80-2
Zr	x		7440-67-7
Co	x		7440-48-4
Mg	x		7439-95-4
Li	x		7439-93-2

RN 756879-33-1 HCAPLUS  
 CN Aluminum cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2
Al	x	7429-90-5

- IC ICM H01M004-48  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST cathode active material  
     nonaq electrolyte secondary  
     battery  
 IT Battery cathodes  
     Electric vehicles  
         Secondary batteries  
             (cathode active material for  
             nonaq. electrolyte secondary  
             battery)  
 IT Carbonaceous materials (technological products)  
     RL: DEV (Device component use); USES (Uses)  
         (cathode active material for  
         nonaq. electrolyte secondary  
         battery)  
 IT Telephones  
     (cellular phones; cathode active  
     material for nonaq. electrolyte  
     secondary battery)  
 IT Transition metal oxides  
     RL: DEV (Device component use); USES (Uses)  
         (lithiated; cathode active material  
         for nonaq. electrolyte secondary  
         battery)  
 IT Secondary batteries  
     (lithium; cathode active  
     material for nonaq. electrolyte  
     secondary battery)  
 IT Computers  
     (personal; cathode active material  
     for nonaq. electrolyte secondary  
     battery)  
 IT Lithium alloy, base  
     RL: DEV (Device component use); USES (Uses)  
         (cathode active material for  
         nonaq. electrolyte secondary  
         battery)  
 IT 7439-93-2, Lithium, uses 131344-56-4, Cobalt lithium nickel  
     oxide 177997-13-6, Aluminum cobalt lithium nickel oxide  
     182442-95-1, Cobalt lithium manganese nickel oxide  
     RL: DEV (Device component use); USES (Uses)  
         (cathode active material for  
         nonaq. electrolyte secondary  
         battery)  
 IT 116713-67-8P, Cobalt lithium titanium oxide 147683-99-6P, Cobalt  
     lithium zirconium oxide 187144-48-5P, Cobalt lithium magnesium  
     oxide 191025-46-4P, Cobalt lithium nickel zirconium oxide  
     642999-33-5P, Cobalt lithium magnesium zirconium oxide  
     756879-33-1P  
     RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
     (Preparation); USES (Uses)  
         (cathode active material for

nonaq. electrolyte secondary  
battery)  
OS.CITING REF COUNT: 6 THERE ARE 6 CAPLUS RECORDS THAT CITE  
THIS RECORD (16 CITINGS)

L75 ANSWER 18 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
ACCESSION NUMBER: 2004:680809 HCAPLUS Full-text  
DOCUMENT NUMBER: 141:210081  
TITLE: Cathode active  
material and nonaqueous  
electrolyte secondary  
battery  
INVENTOR(S): Matsushita, Takuro; Sakamoto, Takako; Eto,  
Hiroyasu  
PATENT ASSIGNEE(S): Nichia Chemical Industries Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 22 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004235144	A	20040819	JP 2003-429625	
				2003
				1225
<--				
PRIORITY APPLN. INFO.:		JP 2003-5009	A	
				2003
				0110
<--				

ED Entered STN: 20 Aug 2004  
 AB The disclosed cathode active substances are spinel structure Li-transition metal oxides containing alkali or alkaline earth metal. The secondary battery containing the cathode active substances has improved power output and cyclic charge-discharge characteristics. The cathode active material for the nonaq. electrolyte secondary battery which is stated in this invention the alkaline metal and/or is the cathode active material for the nonaq. electrolyte secondary battery which possesses the lithium transition metal compound oxide which consists of the spinel structure which includes the alkaline earths metal. The alkaline metal and/or by the fact that the alkaline earths metal is added, decrease of the diffused resistor of the lithium ion becomes possible, it is thought that output characteristics improve. In addition, in order for crystalline structure of the lithium transition metal compound oxide which consists of spinel structure and furthermore to be stabilized, it is thought that the cycle charge-discharge behavior furthermore improve. It is not.  
 IT 253868-42-7P, Cobalt lithium magnesium titanium oxide  
 678158-98-0P, Cobalt hafnium lithium magnesium oxide  
 678158-99-1P, Cobalt lithium magnesium zirconium oxide (Co<sub>0.98</sub>LiMg<sub>0.01</sub>Zr<sub>0.01</sub>O<sub>2</sub>)  
 RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (lithium secondary battery  
 cathode active substance)  
 RN 253868-42-7 HCAPLUS  
 CN Cobalt lithium magnesium titanium oxide (CA INDEX NAME)

Component	Ratio	Component	Registry Number
O	x		17778-80-2
Co	x		7440-48-4
Ti	x		7440-32-6
Mg	x		7439-95-4

## 10/563,124-324074-EIC SEARCH

Li | x | 7439-93-2

RN 678158-98-0 HCAPLUS  
 CN Cobalt hafnium lithium magnesium oxide (CA INDEX NAME)

Component	Ratio	Component	
		Registry Number	
O	x	17778-80-2	
Hf	x	7440-58-6	
Co	x	7440-48-4	
Mg	x	7439-95-4	
Li	x	7439-93-2	

RN 678158-99-1 HCAPLUS  
 CN Cobalt lithium magnesium zirconium oxide (Co0.98LiMg0.01Zr0.01O2)  
 (CA INDEX NAME)

Component	Ratio	Component	
		Registry Number	
O	2	17778-80-2	
Zr	0.01	7440-67-7	
Co	0.98	7440-48-4	
Mg	0.01	7439-95-4	
Li	1	7439-93-2	

IC ICM H01M004-58  
 ICS H01M004-02; H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST nonaq lithium battery  
 cathode active lithium transition metal oxide  
 IT Battery cathodes  
 (alkali or alkaline earth metal-containing lithium transition metal  
 composite oxides as cathode active  
 substance for)  
 IT 198213-69-3P, Cobalt lithium magnesium oxide (Co0.99LiMg0.01O2)  
 283888-82-7P, Cobalt lithium magnesium titanium oxide  
 329082-61-3P, Cobalt lithium zirconium oxide (Co0.99LiZr0.01O2)  
 477700-15-5P, Cobalt lithium oxide (Co0.99LiO2)  
 678158-98-0P, Cobalt hafnium lithium magnesium oxide  
 678158-99-1P, Cobalt lithium magnesium zirconium oxide  
 (Co0.98LiMg0.01Zr0.01O2)  
 RL: SPN (Synthetic preparation); TEM (Technical or engineered  
 material use); PREP (Preparation); USES (Uses)  
 (lithium secondary battery  
 cathode active substance)

OS.CITING REF COUNT: 3 THERE ARE 3 CAPLUS RECORDS THAT CITE  
 THIS RECORD (3 CITINGS)

L75 ANSWER 19 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2004:678453 HCAPLUS Full-text  
 DOCUMENT NUMBER: 141:210058  
 TITLE: Nonaqueous electrolyte  
 secondary battery  
 INVENTOR(S): Takahashi, Yasufumi; Fujimoto, Hiroyuki;  
 Kinoshita, Akira; Fujihara, Toyoki; Tode,  
 Shingo; Nakane, Ikuro; Fujitani, Shin  
 PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan  
 SOURCE: PCT Int. Appl., 36 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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10/563,124-324074-EIC SEARCH

WO 2004070863	A1	20040819	WO 2004-JP358	
				2004 0119
<--				
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
JP 2005050779	A	20050224	JP 2003-392395	
				2003 1121
<--				
JP 4307962	B2	20090805		
EP 1598884	A1	20051123	EP 2004-703249	
				2004 0119
<--				
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
CN 1771619	A	20060510	CN 2004-80003421	
				2004 0119
<--				
CN 100342571	C	20071010		
US 20060078795	A1	20060413	US 2005-544210	
				2005 0802
<--				
US 20090208846	A1	20090820	US 2009-385710	
				2009 0416
<--				
PRIORITY APPLN. INFO.:			JP 2003-25761	A
				2003 0203
<--				
JP 2003-195652			A	2003 0711
<--				
JP 2003-392395			A	2003 1121
<--				
WO 2004-JP358			W	2004 0119
<--				
US 2005-544210			A3	2005 0802
<--				

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 19 Aug 2004

AB A nonaq. electrolyte secondary battery comprising a pos. electrode containing a pos. electrode active material, a neg. electrode containing a neg. electrode active material, and a nonaq. electrolyte is characterized in that the pos. electrode active material is composed of a lithium transition metal oxide having a layer structure and containing

# 10/563,124-324074-EIC SEARCH

- Li and Co and further contains a group IVA element and group IIA element of the periodic table. The secondary battery shows greatly improved cyclic use lifetime.
- IT 253868-42-7P, Cobalt lithium magnesium titanium oxide  
 678158-98-0P, Cobalt hafnium lithium magnesium oxide  
 678158-99-1P, Cobalt lithium magnesium zirconium oxide  
 (Co0.98LiMg0.01Zr0.01O2)  
 RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (nonaq. electrolyte secondary  
 battery anode active  
 substance)
- RN 253868-42-7 HCAPLUS  
 CN Cobalt lithium magnesium titanium oxide (CA INDEX NAME)
- | Component | Ratio | Component       |
|-----------|-------|-----------------|
|           |       | Registry Number |
| O         | x     | 17778-80-2      |
| Co        | x     | 7440-48-4       |
| Ti        | x     | 7440-32-6       |
| Mg        | x     | 7439-95-4       |
| Li        | x     | 7439-93-2       |
- RN 678158-98-0 HCAPLUS  
 CN Cobalt hafnium lithium magnesium oxide (CA INDEX NAME)
- | Component | Ratio | Component       |
|-----------|-------|-----------------|
|           |       | Registry Number |
| O         | x     | 17778-80-2      |
| Hf        | x     | 7440-58-6       |
| Co        | x     | 7440-48-4       |
| Mg        | x     | 7439-95-4       |
| Li        | x     | 7439-93-2       |
- RN 678158-99-1 HCAPLUS  
 CN Cobalt lithium magnesium zirconium oxide (Co0.98LiMg0.01Zr0.01O2)  
 (CA INDEX NAME)
- | Component | Ratio | Component       |
|-----------|-------|-----------------|
|           |       | Registry Number |
| O         | 2     | 17778-80-2      |
| Zr        | 0.01  | 7440-67-7       |
| Co        | 0.98  | 7440-48-4       |
| Mg        | 0.01  | 7439-95-4       |
| Li        | 1     | 7439-93-2       |
- IC ICM H01M004-58  
 ICS H01M004-02; H01M010-40; H01M004-62  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST nonaq electrolyte battery  
 anode active lithium cobalt oxide  
 IT Battery anodes  
 (nonaq. lithium battery;  
 lithium cobalt oxide type anode  
 active substances for)
- IT 198213-69-3P, Cobalt lithium magnesium oxide (Co0.99LiMg0.01O2)  
 253868-42-7P, Cobalt lithium magnesium titanium oxide  
 329082-61-3P, Cobalt lithium zirconium oxide (Co0.99LiZr0.01O2)  
 477700-15-5P, Cobalt lithium oxide (Co0.99LiO2)  
 678158-98-0P, Cobalt hafnium lithium magnesium oxide  
 678158-99-1P, Cobalt lithium magnesium zirconium oxide  
 (Co0.98LiMg0.01Zr0.01O2)  
 RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (nonaq. electrolyte secondary

## 10/563,124-324074-EIC SEARCH

battery anode active  
substance)  
OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE  
THIS RECORD (2 CITINGS)  
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L75 ANSWER 20 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
ACCESSION NUMBER: 2004:609797 HCAPLUS Full-text  
DOCUMENT NUMBER: 141:108983  
TITLE: A highly safe battery pack for  
lithium ion secondary  
battery  
INVENTOR(S): Yoshizawa, Hiroshi; Saito, Koji; Shirasawa,  
Katsuyuki; Ohta, Shinji  
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd.,  
Japan  
SOURCE: U.S. Pat. Appl. Publ., 11 pp.  
CODEN: USXXCO  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 20040146775	A1	20040729	US 2003-736536	2003 1217
				<--
US 7354677	B2	20080408		
JP 2004228045	A	20040812	JP 2003-17918	2003 0127
				<--
PRIORITY APPLN. INFO.:			JP 2003-17918	A
				2003 0127
				<--

## ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 30 Jul 2004

AB A battery pack comprises a lithium ion secondary battery and a current interrupting device for protecting the secondary battery, the secondary battery comprising pos. and neg. electrodes, a separator interposed between the pos. and neg. electrodes and a nonaq. electrolyte, the current interrupting device comprising a recoverable device and a non-recoverable device, the recoverable and non-recoverable devices being connected in series with each other, and the non-recoverable device having an operating temperature of not less than 90° and less than 150°.

IT 105-58-8, Diethyl carbonate

RL: DEV (Device component use); USES (Uses)  
(highly safe battery pack for lithium ion  
secondary battery)

RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (CA INDEX NAME)



IT 253868-42-7P, Cobalt lithium magnesium titanium oxide  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP

(Preparation); USES (Uses)  
 (highly safe battery pack for lithium ion  
 secondary battery)

RN 253868-42-7 HCPLUS

CN Cobalt lithium magnesium titanium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Co	x	7440-48-4
Ti	x	7440-32-6
Mg	x	7439-95-4
Li	x	7439-93-2

IC ICM H01M010-50

ICS H01M004-52; H01M010-40

INCL 429061000; 429062000; 429231300; 429231600; 429330000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 76

ST safe battery pack lithium ion  
secondary battery

IT PTCR materials

(device; highly safe battery pack for lithium  
ion secondary battery)

IT Shape memory alloys

RL: DEV (Device component use); USES (Uses)  
(device; highly safe battery pack for lithium  
ion secondary battery)

IT Circuit breakers

(highly safe battery pack for lithium ion  
secondary battery)

IT Secondary batteries

(lithium; highly safe battery pack for  
lithium ion secondary battery)IT 719276-48-9, Cobalt lithium magnesium oxide Co0.94Li1.01Mg0.05O2  
721430-97-3, Copper lithium magnesium oxide (Cu0.94Li1.01Mg0.05O2)RL: DEV (Device component use); USES (Uses)  
(Al-doped; highly safe battery pack for  
lithium ion secondary battery)IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate

105-58-8, Diethyl carbonate

7782-42-5, Graphite, uses 14283-07-9, lithium

tetrafluoroborate 21324-40-3, lithium

hexafluorophosphate 187144-48-5, Cobalt lithium magnesium oxide

RL: DEV (Device component use); USES (Uses)

(highly safe battery pack for lithium ion  
secondary battery)

IT 160152-00-1P, Cobalt lithium oxide CoLi1.01O2 180997-14-2P,

Cobalt lithium magnesium nickel oxide 253868-42-7P,

Cobalt lithium magnesium titanium oxide 642999-49-3P, Aluminum

Cobalt lithium magnesium oxide 721430-98-4P, Cobalt lithium

magnesium strontium oxide 721430-99-5P, Calcium cobalt lithium

magnesium oxide

RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)(highly safe battery pack for lithium ion  
secondary battery)OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE  
THIS RECORD (1 CITINGS)REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L75 ANSWER 21 OF 32 HCPLUS COPYRIGHT 2010 ACS on STN

ACCESSION NUMBER: 2004:589101 HCPLUS Full-text

## 10/563,124-324074-EIC SEARCH

DOCUMENT NUMBER: 141:108973  
 TITLE: Method of producing cathode active material for nonaqueous electrolyte secondary battery  
 INVENTOR(S): Nagayama, Masatoshi; Yoshizawa, Hiroshi  
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan  
 SOURCE: U.S. Pat. Appl. Publ., 11 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20040142241	A1	20040722	US 2004-750861	2004 0105
US 7157186	B2	20070102		<--
JP 2004220785	A	20040805	JP 2003-2893	2003 0109
JP 4274801	B2	20090610		<--
CN 1518142	A	20040804	CN 2004-10001673	2004 0109
CN 1258240	C	20060531	JP 2003-2893	A 2003 0109
PRIORITY APPLN. INFO.:				<--

ED Entered STN: 23 Jul 2004  
 AB A method of producing a pos. electrode active material for a nonaq. electrolyte secondary battery comprises the steps of: (a) preparing a raw material mixture, comprising "nx" mol of magnesium, "ny" mol of an element M where the element M is at least one selected from the group consisting of Al, Ti, Sr, Mn, Ni and Ca, "n(1-x-y)" mol of cobalt and "nz" mol of lithium, such that the values n, x, y and z satisfy 0<n, 0.97≤(1/z)≤1, 0.005≤x≤0.1, and 0.001≤y≤0.03; and (b) baking the raw material mixture in an oxidization atmospheric at 1000 to 1100°.  
 IT 719276-56-9P, Cobalt lithium magnesium titanium oxide (Co0.94Li1.01Mg0.05Ti0.01O2) 719276-57-0P, Cobalt lithium magnesium titanium oxide (Co0.93Li1.01Mg0.05Ti0.03O2)  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (method of producing cathode active material for nonaq. electrolyte secondary battery)  
 RN 719276-56-9 HCPLUS  
 CN Cobalt lithium magnesium titanium oxide (Co0.94Li1.01Mg0.05Ti0.01O2) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.94	7440-48-4
Ti	0.01	7440-32-6
Mg	0.05	7439-95-4
Li	1.01	7439-93-2

RN 719276-57-0 HCAPLUS  
 CN Cobalt lithium magnesium titanium oxide  
 (Co0.93Li1.01Mg0.05Ti0.03O2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.93	7440-48-4
Ti	0.03	7440-32-6
Mg	0.05	7439-95-4
Li	1.01	7439-93-2

- IC ICM H01M004-52  
 INCL 429231300  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST cathode active material prepn  
 nonaq electrolyte secondary  
 battery  
 IT Secondary batteries  
 (lithium; method of producing cathode  
 active material for nonaq.  
 electrolyte secondary battery)  
 IT Battery cathodes  
 (method of producing cathode active  
 material for nonaq. electrolyte  
 secondary battery)  
 IT 141051-66-3P, Cobalt lithium oxide Co0.99Li1.01O2  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
 (Preparation); USES (Uses)  
 (Al- and Mg-doped; method of producing cathode  
 active material for nonaq.  
 electrolyte secondary battery)  
 IT 719276-48-9P, Cobalt lithium magnesium oxide  
 (Co0.94Li1.01Mg0.05O2) 719276-49-0P, Cobalt lithium magnesium  
 oxide (Co0.98Li1.01Mg0.01O2) 719276-50-3P, Cobalt lithium  
 magnesium oxide (Co0.98Li1.01Mg0.02O2) 719276-51-4P, Cobalt  
 lithium magnesium oxide (Co0.96Li1.01Mg0.03O2) 719276-52-5P,  
 Cobalt lithium magnesium oxide (Co0.92Li1.01Mg0.08O2)  
 719276-53-6P, Cobalt lithium magnesium oxide (Co0.9Li1.01Mg0.1O2)  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
 (Preparation); USES (Uses)  
 (Al-doped; method of producing cathode active  
 material for nonaq. electrolyte  
 secondary battery)  
 IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate  
 7782-42-5, Graphite, uses 14283-07-9, Lithium tetrafluoroborate  
 RL: DEV (Device component use); USES (Uses)  
 (method of producing cathode active  
 material for nonaq. electrolyte  
 secondary battery)  
 IT 719276-54-7P, Aluminum cobalt lithium magnesium oxide  
 (Al0.01Co0.94Li1.01Mg0.05O2) 719276-55-8P, Aluminum cobalt  
 lithium magnesium oxide (Al0.03Co0.93Li1.01Mg0.05O2)  
 719276-56-9P, Cobalt lithium magnesium titanium oxide  
 (Co0.94Li1.01Mg0.05Ti0.01O2) 719276-57-0P, Cobalt  
 lithium magnesium titanium oxide (Co0.93Li1.01Mg0.05Ti0.03O2)  
 719276-58-1P, Cobalt lithium magnesium strontium oxide  
 (Co0.94Li1.01Mg0.05Sr0.01O2) 719276-59-2P, Cobalt lithium  
 magnesium strontium oxide (Co0.93Li1.01Mg0.05Sr0.03O2)  
 719276-60-5P, Cobalt lithium magnesium manganese oxide  
 (Co0.94Li1.01Mg0.05Mn0.01O2) 719276-61-6P, Cobalt lithium  
 magnesium manganese oxide (Co0.93Li1.01Mg0.05Mn0.03O2)  
 719276-62-7P, Cobalt lithium magnesium nickel oxide  
 (Co0.94Li1.01Mg0.05Ni0.01O2) 719276-63-8P, Cobalt lithium  
 magnesium nickel oxide (Co0.93Li1.01Mg0.05Ni0.03O2)

10/563,124-324074-EIC SEARCH

719276-64-9P, Calcium cobalt lithium magnesium oxide  
 (Ca0.01Co0.94Li1.01Mg0.05O2) 719276-65-0P, Calcium cobalt  
 lithium magnesium oxide (Ca0.03Co0.93Li1.01Mg0.05O2)  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
 (Preparation); USES (Uses)  
 (method of producing cathode active  
 material for nonaq. electrolyte  
 secondary battery)

IT 7429-90-5, Aluminum, uses 7439-96-5, Manganese, uses  
 7440-02-0, Nickel, uses 7440-24-6, Strontium, uses 7440-32-6,  
 Titanium, uses 7440-70-2, Calcium, uses  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (method of producing cathode active  
 material for nonaq. electrolyte  
 secondary battery)

IT 554-13-2, Lithium carbonate 11113-74-9, Nickel hydroxide  
 11129-60-5, Manganese oxide 13463-67-7, Titanium oxide,  
 reactions 18480-07-4, Strontium hydroxide 21645-51-2, Aluminum  
 hydroxide, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (method of producing cathode active  
 material for nonaq. electrolyte  
 secondary battery)

IT 61179-07-5P, Cobalt magnesium hydroxide  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
 (Preparation); RACT (Reactant or reagent)  
 (method of producing cathode active  
 material for nonaq. electrolyte  
 secondary battery)

OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE  
 THIS RECORD (2 CITINGS)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L75 ANSWER 22 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2004:589100 HCAPLUS Full-text  
 DOCUMENT NUMBER: 141:126370  
 TITLE: Cathode active  
 material for nonaqueous  
 electrolyte secondary  
 battery  
 INVENTOR(S): Nagayama, Masatoshi; Yoshizawa, Hiroshi  
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd.,  
 Japan  
 SOURCE: U.S. Pat. Appl. Publ., 16 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20040142240	A1	20040722	US 2004-751920	2004 0107
			<--	
US 7381497	B2	20080603		
JP 2004220952	A	20040805	JP 2003-7916	2003 0116
			<--	
JP 4271448	B2	20090603		
CN 1518145	A	20040804	CN 2004-10002752	2004

0116

CN 1276532  
PRIORITY APPLN. INFO.:

C 20060920

JP 2003-7916

A

2003  
0116

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## ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 23 Jul 2004

AB The invention concerns a pos. electrode active material for a nonaq. electrolyte secondary battery, comprising a lithium-containing composite oxide, wherein the composite oxide is represented by the general formula:  $LizCo_{1-x-y}MgxMyO_2$ , the element M included in the general formula is at least one selected from the group consisting of Al, Ti, Sr, Mn, Ni and Ca, the values x, y and z included in the general formula satisfy: (i)  $0 \leq z \leq 1.03$ ; (ii)  $0.005 \leq x \leq 0.1$ ; and (iii)  $0.001 \leq y \leq 0.03$ , the composite oxide has a crystal structure attributed to a hexagonal system in an overcharged state having a potential over 4.25 V relative to metallic Li, and a maximum value of an oxygen generation peak in a gas chromatograph mass spectrometry measurement of the composite oxide in the overcharged state is in the range of 330 to 370°.

IT 253868-42-7, Cobalt lithium magnesium titanium oxide  
 719276-56-9, Cobalt lithium magnesium titanium oxide  
 $Co0.94Li1.01Mg0.05Ti0.01O_2$  719276-57-0, Cobalt lithium  
 magnesium titanium oxide  $Co0.93Li1.01Mg0.05Ti0.03O_2$   
 $721448-57-3$ , Cobalt lithium magnesium titanium oxide  
 $(Co0.9Li1.01Mg0.05Ti0.05O_2)$   
 RL: DEV (Device component use); USES (Uses)  
 (cathode active material for  
 nonaq. electrolyte secondary  
 battery)

RN 253868-42-7 HCPLUS

CN Cobalt lithium magnesium titanium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Co	x	7440-48-4
Ti	x	7440-32-6
Mg	x	7439-95-4
Li	x	7439-93-2

RN 719276-56-9 HCPLUS

CN Cobalt lithium magnesium titanium oxide  
 $(Co0.94Li1.01Mg0.05Ti0.01O_2)$  (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.94	7440-48-4
Ti	0.01	7440-32-6
Mg	0.05	7439-95-4
Li	1.01	7439-93-2

RN 719276-57-0 HCPLUS

CN Cobalt lithium magnesium titanium oxide  
 $(Co0.93Li1.01Mg0.05Ti0.03O_2)$  (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.93	7440-48-4
Ti	0.03	7440-32-6
Mg	0.05	7439-95-4
Li	1.01	7439-93-2

RN 721448-57-3 HCAPLUS  
 CN Cobalt lithium magnesium titanium oxide  
 (Co0.9Li1.01Mg0.05Ti0.05O2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.9	7440-48-4
Ti	0.05	7440-32-6
Mg	0.05	7439-95-4
Li	1.01	7439-93-2

IC ICM H01M004-52  
 INCL 429231100; 429231300; 429231600; 429231500; 429233000  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST cathode active material  
 nonaq electrolyte secondary  
 battery  
 IT Battery cathodes  
 (cathode active material for  
 nonaq. electrolyte secondary  
 battery)  
 IT Secondary batteries  
 (lithium; cathode active  
 material for nonaq. electrolyte  
 secondary battery)  
 IT 141051-66-3, Cobalt lithium oxide Co0.99Li1.01O2  
 RL: DEV (Device component use); USES (Uses)  
 (Al- and Mg-doped; cathode active  
 material for nonaq. electrolyte  
 secondary battery)  
 IT 719276-49-0, Cobalt lithium magnesium oxide (Co0.98Li1.01Mg0.01O2)  
 719276-50-3, Cobalt lithium magnesium oxide (Co0.98Li1.01Mg0.02O2)  
 719276-51-4, Cobalt lithium magnesium oxide (Co0.96Li1.01Mg0.03O2)  
 719276-52-5, Cobalt lithium magnesium oxide Co0.92Li1.01Mg0.08O2  
 719276-53-6, Cobalt lithium magnesium oxide Co0.9Li1.01Mg0.1O2  
 721448-55-1, Cobalt lithium magnesium oxide (Co0.95Li1.01Mg0.05O2)  
 RL: DEV (Device component use); USES (Uses)  
 (Al-doped; cathode active material  
 for nonaq. electrolyte secondary  
 battery)  
 IT 180997-14-2, Cobalt lithium magnesium nickel oxide  
 253868-42-7, Cobalt lithium magnesium titanium oxide  
 429678-65-9, Cobalt lithium magnesium manganese oxide  
 642999-49-3, Aluminum cobalt lithium magnesium oxide  
 719276-48-9, Cobalt lithium magnesium oxide (Co0.94Li1.01Mg0.05O2)  
 719276-54-7, Aluminum cobalt lithium magnesium oxide  
 A10.01Co0.94Li1.01Mg0.05O2 719276-55-8, Aluminum cobalt lithium  
 magnesium oxide A10.03Co0.93Li1.01Mg0.05O2 719276-56-9  
 , Cobalt lithium magnesium titanium oxide  
 Co0.94Li1.01Mg0.05Ti0.01O2 719276-57-0, Cobalt lithium  
 magnesium titanium oxide Co0.93Li1.01Mg0.05Ti0.03O2 719276-58-1,  
 Cobalt lithium magnesium strontium oxide  
 Co0.94Li1.01Mg0.05Sr0.01O2 719276-59-2, Cobalt lithium magnesium  
 strontium oxide Co0.93Li1.01Mg0.05Sr0.03O2 719276-60-5, Cobalt  
 lithium magnesium manganese oxide Co0.94Li1.01Mg0.05Mn0.01O2  
 719276-61-6, Cobalt lithium magnesium manganese oxide  
 Co0.93Li1.01Mg0.05Mn0.03O2 719276-62-7, Cobalt lithium magnesium  
 nickel oxide Co0.94Li1.01Mg0.05Ni0.01O2 719276-63-8, Cobalt  
 lithium magnesium nickel oxide Co0.93Li1.01Mg0.05Ni0.03O2  
 719276-64-9, Calcium cobalt lithium magnesium oxide  
 Ca0.01Co0.94Li1.01Mg0.05O2 719276-65-0, Calcium cobalt lithium  
 magnesium oxide Ca0.03Co0.93Li1.01Mg0.05O2 721430-98-4, Cobalt  
 lithium magnesium strontium oxide 721430-99-5, Calcium cobalt  
 lithium magnesium oxide 721448-51-7, Cobalt lithium magnesium

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oxide (Co0.94Li1.04Mg0.05O2) 721448-52-8, Cobalt lithium magnesium oxide (Co0.94Li1.03Mg0.05O2) 721448-53-9, Cobalt lithium magnesium oxide (Co0.94LiMg0.05O2) 721448-56-2, Aluminum cobalt lithium magnesium oxide (Al0.05Co0.9Li1.01Mg0.05O2) 721448-57-3, Cobalt lithium magnesium titanium oxide (Co0.9Li1.01Mg0.05Ti0.05O2) 721448-58-4, Cobalt lithium magnesium strontium oxide (Co0.9Li1.01Mg0.05Sr0.05O2) 721448-59-5, Cobalt lithium magnesium manganese oxide (Co0.9Li1.01Mg0.05Mn0.05O2) 721448-60-8, Cobalt lithium magnesium nickel oxide (Co0.9Li1.01Mg0.05Ni0.05O2) 721448-61-9, Calcium cobalt lithium magnesium oxide (Ca0.05Co0.9Li1.01Mg0.05O2)  
 RL: DEV (Device component use); USES (Uses)  
 (cathode active material for  
 nonaq. electrolyte secondary  
 battery)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)  
 REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L75 ANSWER 23 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2004:533748 HCAPLUS Full-text  
 DOCUMENT NUMBER: 141:74296  
 TITLE: Nonaqueous electrolyte rechargeable battery  
 INVENTOR(S): Nagayama, Masatoshi; Yoshizawa, Hiroshi  
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan  
 SOURCE: U.S. Pat. Appl. Publ., 9 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20040126661	A1	20040701	US 2003-730049	2003 1209 ---
US 7255963	B2	20070814		
JP 2004207120	A	20040722	JP 2002-376664	2002 1226 ---
JP 3844733	B2	20061115		
PRIORITY APPLN. INFO.:			JP 2002-376664	A 2002 1226 ---

ED Entered STN: 02 Jul 2004

AB A nonaq. electrolyte rechargeable battery includes: (a) a pos. electrode capable of charging and discharging lithium; (b) a neg. electrode capable of charging and discharging lithium; (c) a separator or a lithium ion conductive layer interposed between the pos. electrode and the neg. electrode; and (d) a lithium ion conductive nonaq. electrolyte, wherein the pos. electrode contains a mixture of a first pos. electrode active material and a second pos. electrode active material, the first pos. electrode active material includes lithium oxide containing manganese, the lithium oxide further contains aluminum and/or magnesium, and the second pos. electrode active material includes  $\text{Li}_{x}\text{Co}_{1-y-z}\text{Mg}_y\text{Al}_z\text{O}_2$  where  $1 \leq x \leq 1.03$ ,  $0.005 \leq y \leq 0.1$  and  $0.001 \leq z < 0.02$ .

IT 709654-49-9, Cobalt lithium magnesium titanium oxide (Co0.94LiMg0.05Ti0.01O2)

## 10/563,124-324074-EIC SEARCH

RL: DEV (Device component use); USES (Uses)  
 (nonaq. electrolyte rechargeable  
 battery)

RN 709654-49-9 HCAPLUS

CN Cobalt lithium magnesium titanium oxide ( $\text{Co}_{0.94}\text{LiMg}_{0.05}\text{Ti}_{0.01}\text{O}_2$ )  
 (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.94	7440-48-4
Ti	0.01	7440-32-6
Mg	0.05	7439-95-4
Li	1	7439-93-2

IC ICM H01M004-50

INCL 429224000; 429231300; 429231600; 429231100

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST nonaq electrolyte rechargeable battery

IT Battery cathodes

Secondary batteries  
 (nonaq. electrolyte rechargeable  
 battery)

IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate  
 7782-42-5, Graphite, uses 21324-40-3, Lithium  
 hexafluorophosphate 61179-01-9, Aluminum lithium manganese oxide  
 $136479-37-3$ , Lithium magnesium manganese oxide  $\text{LiMg}_{0.2}\text{Mn}_{1.8}\text{O}_4$   
 $142447-12-9$ , Cobalt lithiummanganese oxide  $\text{Co}_{0.95}\text{LiMn}_{0.05}\text{O}_2$   
 $145896-60-2$ , Aluminum lithium manganese oxide  $\text{Al}_{0.2}\text{LiMn}_{1.8}\text{O}_4$   
 $175786-46-6$ , Lithium magnesium manganese oxide 184092-89-5,  
 Cobalt lithium titanium oxide  $\text{Co}_{0.95}\text{LiTi}_{0.05}\text{O}_2$  186298-17-9,  
 Aluminum cobalt lithium manganese nickel oxide 193216-10-3,  
 Aluminum cobalt lithium manganese nickel oxide  
 $\text{Al}_{0.1}\text{Co}_{0.1}\text{LiMn}_{0.4}\text{Ni}_{0.4}\text{O}_2$  347175-77-3, Aluminum Lithium magnesium  
 manganese oxide 372491-83-3, Aluminum cobalt lithium magnesium  
 oxide  $\text{Al}_{0.01}\text{Co}_{0.94}\text{LiMg}_{0.05}\text{O}_2$  433969-25-6, Aluminum Cobalt  
 lithium magnesium manganese nickel oxide 478037-17-1, Cobalt  
 lithium magnesium manganese nickel oxide 642999-49-3, Aluminum  
 cobalt lithium magnesium oxide 709654-46-6 709654-47-7,  
 Aluminum cobalt lithium oxide ( $\text{Al}_{0.05}\text{Co}_{0.9}\text{LiO}_2$ ) 709654-48-8,  
 Cobalt lithium magnesium manganese oxide ( $\text{Co}_{0.94}\text{LiMg}_{0.05}\text{Mn}_{0.01}\text{O}_2$ )  
 $709654-49-9$ , Cobalt lithium magnesium titanium oxide  
 $(\text{Co}_{0.94}\text{LiMg}_{0.05}\text{Ti}_{0.01}\text{O}_2)$  709654-50-2, Cobalt lithium manganese  
 titanium oxide ( $\text{Co}_{0.95}\text{LiMn}_{0.02}\text{Ti}_{0.02}\text{O}_2$ ) 709654-51-3, Aluminum  
 cobalt lithium manganese oxide ( $\text{Al}_{0.02}\text{Co}_{0.95}\text{LiMn}_{0.02}\text{O}_2$ )

RL: DEV (Device component use); USES (Uses)  
 (nonaq. electrolyte rechargeable  
 battery)

OS.CITING REF COUNT: 3 THERE ARE 3 CAPLUS RECORDS THAT CITE

THIS RECORD (3 CITINGS)

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L75 ANSWER 24 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2003:796193 HCAPLUS Full-text  
 DOCUMENT NUMBER: 139:310049  
 TITLE: Batteries comprising  
 alkali-transition metal phosphates and  
 preferred electrolytes  
 INVENTOR(S): Pugh, James; Saidi, Mohammed Y.; Huang, Haitao  
 PATENT ASSIGNEE(S): USA  
 SOURCE: U.S. Pat. Appl. Publ., 24 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English

## 10/563,124-324074-EIC SEARCH

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20030190527	A1	20031009	US 2002-116276	2002 0403
CA 2479790	A1	20031016	CA 2003-2479790	2003 0327
WO 2003085757	A1	20031016	WO 2003-US9634	2003 0327
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				<--
AU 2003224801	A1	20031020	AU 2003-224801	2003 0327
EP 1490917	A1	20041229	EP 2003-721492	2003 0327
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				<--
JP 2005522009	T	20050721	JP 2003-582838	2003 0327
CN 1650450	A	20050803	CN 2003-810033	2003 0327
US 20050181283	A1	20050818	US 2005-80605	2005 0315
PRIORITY APPLN. INFO.:			US 2002-116276	A 2002 0403
			WO 2003-US9634	W 2003 0327

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ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 10 Oct 2003

AB Lithium batteries comprising: (a) an electrode comprising a material AaMb(XY4)cZd ,  
wherein (i) A is an alkali metal and 0<a≤9; (ii) M comprises a transition metal, and  
1≤b≤3; (iii) XY4 is X'04-x Y'x, X'04-yY'2y, X''S4, or mixts. thereof, where X' is P,

# 10/563,124-324074-EIC SEARCH

As, Sb, Si, Ge, V, S, or mixts. thereof; X' is P, As, Sb, Si, Ge, V, or mixts. thereof; Y' is halogen, S, N, or mixts. thereof; 0≤x<3; and 0<y≤2; and 0<c≤3; and (iv) Z is OH, halogen, or mixts. thereof, and 0≤d≤6; and (b) a counter-electrode; and (c) an electrolyte comprising an alkyl and/or alkylene carbonate and a cyclic ester. Preferably, M addnl. comprises at least one non-transition metal. Preferred embodiments include those having an olivine structure, where c = 1, and those having a NASICON structure, where c = 3.

IT 105-58-8, Diethyl carbonate  
 610310-97-9 610321-55-6  
 RL: DEV (Device component use); USES (Uses)  
 (batteries comprising alkali-transition metal  
 phosphates and preferred electrolytes)  
 RN 105-58-8 HCPLUS  
 CN Carbonic acid, diethyl ester (CA INDEX NAME)



RN 610310-97-9 HCPLUS  
 CN Cobalt iron lithium magnesium titanium phosphate  
 (Co0.8Fe0.1LiMg0.05Ti0.02(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Co	0.8	7440-48-4
Ti	0.02	7440-32-6
Mg	0.05	7439-95-4
Li	1	7439-93-2
Fe	0.1	7439-89-6

RN 610321-55-6 HCPLUS  
 CN Cobalt iron lithium magnesium titanium fluoride metaphosphate  
 oxide (Co0.8Fe0.1Li1.02Mg0.02Ti0.02F0.02(PO3)O0.98) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.98	17778-80-2
O3P	1	15389-19-2
F	0.02	14762-94-8
Co	0.8	7440-48-4
Ti	0.02	7440-32-6
Mg	0.02	7439-95-4
Li	1.02	7439-93-2
Fe	0.1	7439-89-6

IC ICM H01M004-58  
 INCL 429231900; 429231950; 429221000; 429223000; 429231500; 429224000;  
 429231600  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 49  
 ST Lithium battery cathode alkali  
 transition metal phosphate  
 IT Battery cathodes  
     Battery electrolytes  
     (batteries comprising alkali-transition metal  
     phosphates and preferred electrolytes)  
 IT Chalcogenides  
     Oxides (inorganic), uses

10/563,124-324074-EIC SEARCH

RL: DEV (Device component use); USES (Uses)  
 (batteries comprising alkali-transition metal  
 phosphates and preferred electrolytes)

IT Carbonates, uses  
 RL: DEV (Device component use); USES (Uses)  
 (esters; batteries comprising alkali-transition metal  
 phosphates and preferred electrolytes)

IT Secondary batteries  
 (lithium; batteries comprising  
 alkali-transition metal phosphates and preferred  
 electrolytes)

IT 57-57-8,  $\beta$ -Propiolactone 96-48-0,  $\gamma$ -Butyrolactone  
 96-49-1, Ethylene carbonate 105-58-8, Diethyl  
 carbonate 108-32-7, 1,2-Propylene carbonate 502-44-3,  
 $\epsilon$ -Caprolactone 542-28-9,  $\delta$ -Valerolactone  
 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate  
 2453-03-4, 1,3-Propylene carbonate 4427-90-1, 1,5-Pentylene  
 carbonate 4427-94-5, 1,4-Butylene carbonate 4437-70-1,  
 2,3-Butylene carbonate 4437-85-8, 1,2-Butylene carbonate  
 7440-44-0, Carbon, uses 7550-35-8, Lithium bromide  
 (LiBr) 7782-42-5, Graphite, uses 7791-03-9, Lithium  
 perchlorate 14024-11-4, Lithium tetrachloroaluminate  
 14283-07-9, Lithium tetrafluoroborate 14485-20-2,  
 Lithium tetraphenylborate 15365-14-7, Iron  
 lithium phosphate felipo 21324-40-3, Lithium  
 hexafluorophosphate 29935-35-1, Lithium  
 hexafluoroarsenate 33454-82-9, Lithium triflate  
 90076-65-6 132843-44-8 610271-90-4 610271-94-8 610272-06-5  
 610310-87-7 610310-88-8 610310-92-4 610310-95-7  
 610310-97-9 610310-99-1 610311-00-7  
 610321-55-6 610321-60-3 610754-69-3  
 RL: DEV (Device component use); USES (Uses)  
 (batteries comprising alkali-transition metal  
 phosphates and preferred electrolytes)

IT 477779-87-6P, Sodium vanadium fluoride phosphate NaVF(PO<sub>4</sub>)  
 484040-01-9P, Iron lithium magnesium fluoride phosphate  
 Fe0.9Li1.25Mg0.1F0.25(PO<sub>4</sub>) 484040-22-4P, Lithium vanadium  
 fluoride phosphate (Li<sub>6</sub>V<sub>2</sub>F(PO<sub>4</sub>)<sub>3</sub>) 484040-28-0P 610272-07-6P  
 610311-01-8P  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
 (Preparation); USES (Uses)  
 (batteries comprising alkali-transition metal  
 phosphates and preferred electrolytes)

OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE  
 THIS RECORD (2 CITINGS)

L75 ANSWER 25 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2003:773745 HCAPLUS Full-text  
 DOCUMENT NUMBER: 139:294543  
 TITLE: Cathode material for  
 nonaqueous electrolyte  
 electric battery  
 INVENTOR(S): Sawa, Takao; Kono, Tatsuoki; Matsuno,  
 Shinsuke; Takami, Norio  
 PATENT ASSIGNEE(S): Toshiba Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 18 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2003282053	A	20031003	JP 2002-84509	

2002  
0325

PRIORITY APPLN. INFO.:

<--  
JP 2002-845092002  
0325

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ED Entered STN: 03 Oct 2003

AB The title **battery** is characterized by having good charging capacity, long cycle lifetime, good charging rate, and being able to reach maximum capacity with min. charging/discharging time. The **cathode** material is a amorphous phase-formed alloy having the following general formula: AaMbTcXdZe or [AaMbTcXdZe]<sub>x</sub>Li<sub>y</sub>, where A consists  $\geq 1$  elements selected from Ca, Sr, and Ba or a composite containing the above elements and alkaline earth metal elements; M consists  $\geq 1$  elements selected from Ni and Cu; T selected from Si, Al, In, Ge, P, Pb, Bi, Sb, Zn, Ga, and C; X selected from Fe, Co, Mn, Cr, Ti, V, Zr, Nb, Hf, Ta, Mo, W, and rare earth elements; and Z containing elements selected from O, C, H, and N.

IT 609780-97-4

RL: DEV (Device component use); USES (Uses)  
(cathode material; cathode material for  
nonaq. electrolyte elec. battery)

RN 609780-97-4 HCPLUS

CN Strontium alloy, base, Sr 34,Ba 27,Cu 17,Co 15,Zr 2.4,O 1.9,Si  
1.5,Li 1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Sr	34	7440-24-6
Ba	27	7440-39-3
Cu	17	7440-50-8
Co	15	7440-48-4
Zr	2.4	7440-67-7
O	1.9	17778-80-2
Si	1.5	7440-21-3
Li	1	7439-93-2

IC ICM H01M004-38

ICS C22C045-04; H01M004-02; H01M004-06; H01M006-16; H01M010-40

CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 76ST **cathode** material nonaq electrolyte  
elec battery

IT Alkaline earth metals

Fluoropolymers, uses

RL: DEV (Device component use); USES (Uses)  
(cathode material containing; cathode material  
for nonaq. electrolyte elec.  
battery)

IT Cathodes

(cathode material for nonaq.  
electrolyte elec. battery)

IT Primary batteries

(elec.; cathode material for nonaq.  
electrolyte elec. battery)IT 96-49-1, Ethylene carbonate 623-53-0, Methylethyl carbonate  
872-50-4, N-Methyl-2-Pyrrolidone, uses 1333-74-0, Hydrogen, uses  
7429-90-5, Aluminum, uses 7439-89-6, Iron, uses 7439-92-1,  
Lead, uses 7439-93-2, Lithium, uses 7439-96-5, Manganese, uses  
7439-98-7, Molybdenum, uses 7440-02-0, Nickel, uses 7440-03-1,  
Niobium, uses 7440-21-3, Silicon, uses 7440-24-6, Strontium,  
uses 7440-25-7, Tantalum, uses 7440-32-6, Titanium, uses  
7440-33-7, Tungsten, uses 7440-36-0, Antimony, uses 7440-39-3,  
Barium, uses 7440-44-0, Carbon, uses 7440-47-3, Chromium, uses  
7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 7440-55-3,  
Gallium, uses 7440-56-4, Germanium, uses 7440-58-6, Hafnium,

10/563,124-324074-EIC SEARCH

uses 7440-62-2, Vanadium, uses 7440-66-6, Zinc, uses 7440-67-7, Zirconium, uses 7440-69-9, Bismuth, uses 7440-70-2, Calcium, uses 7440-74-6, Indium, uses 7723-14-0, Phosphorus, uses 7727-37-9, Nitrogen, uses 7782-42-5, Graphite, uses 7782-44-7, Oxygen, uses 11099-26-6 21324-40-3, Lithium hexafluorophosphate 24937-79-9, PolyfluoroVinylidene 52627-24-4, Lithium cobalt oxide

RL: DEV (Device component use); USES (Uses)  
 (cathode material containing; cathode material  
 for nonaq. electrolyte elec.  
 battery)

IT	609779-59-1	609779-62-6	609779-64-8	609779-66-0
	609779-68-2	609779-72-8	609779-74-0	609779-76-2
	609779-78-4	609779-80-8	609779-82-0	609779-86-4
	609779-88-6	609779-91-1	609779-96-6	609780-00-9
	609780-03-2	609780-05-4	609780-07-6	609780-10-1
	609780-13-4	609780-15-6	609780-17-8	609780-19-0
	609780-22-5	609780-24-7	609780-26-9	609780-28-1
	609780-32-7	609780-34-9	609780-37-2	609780-40-7
	609780-44-1	609780-47-4	609780-50-9	609780-53-2
	609780-57-6	609780-60-1	609780-63-4	609780-66-7
	609780-69-0	609780-73-6	609780-75-8	609780-78-1
	609780-81-6	609780-83-8	609780-85-0	609780-88-3
	609780-90-7	609780-94-1	609780-97-4	609781-00-2
	609781-02-4	609781-06-8	609781-09-1	609781-12-6
	609781-16-0	609781-19-3	609781-21-7	609781-25-1
	609781-28-4	609781-34-2	609781-38-6	609781-42-2
	609781-45-5	609781-49-9	609781-52-4	609781-57-9
	609781-60-4	609781-63-7	609781-66-0	609781-70-6
	609781-73-9	609781-76-2	609781-79-5	609781-83-1

RL: DEV (Device component use); USES (Uses)  
 (cathode material; cathode material for  
 nonaq. electrolyte elec. battery)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE  
 THIS RECORD (1 CITINGS)

L75 ANSWER 26 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2003:757154 HCAPLUS Full-text  
 DOCUMENT NUMBER: 139:263344  
 TITLE: Layered electrodes for lithium cells  
 and batteries  
 INVENTOR(S): Johnson, Christopher S.; Thackeray, Michael  
 M.; Vaughey, John T.; Kahaian, Arthur J.; Kim,  
 Jeom-soo  
 PATENT ASSIGNEE(S): The University of Chicago, USA; UChicago  
 Argonne, LLC  
 SOURCE: U.S. Pat. Appl. Publ., 28 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 20030180616	A1	20030925	US 2003-365286	2003 0212
				<--
US 7358009	B2	20080415	US 2002-357393P	P 2002 0215
				<--

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT  
 ED Entered STN: 26 Sep 2003

10/563,124-324074-EIC SEARCH

AB Lithium metal oxide compds. of nominal formula Li<sub>2</sub>MO<sub>2</sub>, in which M represents two or more pos. charged metal ions, selected predominantly and preferably from the first row of transition metals are disclosed herein. The Li<sub>2</sub>MO<sub>2</sub> compds. have a layered-type structure, which can be used as pos. electrodes for lithium electrochem. cells, or as a precursor for the in-situ electrochem. fabrication of LiMO<sub>2</sub> electrodes. The Li<sub>2</sub>MO<sub>2</sub> compds. of the invention may have addnl. functions in lithium cells, for example, as end-of-discharge indicators, or as neg. electrodes for lithium cells.

IT 105-58-8, Diethyl carbonate  
 RL: DEV (Device component use); USES (Uses)  
 (layered electrodes for lithium cells and batteries)

RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (CA INDEX NAME)



IT 309242-27-1, Cobalt lithium magnesium nickel titanium oxide Co0.15LiMg0.05Ni0.75Ti0.05O<sub>2</sub>  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (layered electrodes for lithium cells and batteries)

RN 309242-27-1 HCAPLUS

CN Cobalt lithium magnesium nickel titanium oxide (Co0.15LiMg0.05Ni0.75Ti0.05O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.15	7440-48-4
Ti	0.05	7440-32-6
Ni	0.75	7440-02-0
Mg	0.05	7439-95-4
Li	1	7439-93-2

IC ICM H01M004-48  
 ICS H01M004-52; H01M004-50; H01M004-62; C01G045-12; C01G049-02;  
 C01G023-04; C01G051-04; C01G053-04

INCL 429231100; X42-923.2; X42-923.12; X42-923.15; X42-922.4;  
 X42-922.3; X42-922.1; X42-922.0; X42-359.31; X42-359.42

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 49

ST Lithium battery layered electrode

IT Battery cathodes  
 Battery electrodes  
 (layered electrodes for lithium cells and batteries)

IT Metals  
 Oxides (inorganic)  
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)  
 (layered electrodes for lithium cells and batteries)

IT Intermetallic compounds  
 Nitrides  
 RL: DEV (Device component use); USES (Uses)  
 (layered electrodes for lithium cells and batteries)

IT Inorganic compounds  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP

(Preparation); USES (Uses)  
 (layered; layered electrodes for lithium cells and batteries)

IT Secondary batteries  
 (lithium; layered electrodes for lithium cells and batteries)

IT 109-72-8, n-Butyllithium, processes 546-68-9 1310-66-3, Lithium hydroxide monohydrate 7308-67-0, Lithium naphthalide, processes 7439-93-2, Lithium, processes 7440-44-0, Carbon, processes 7782-42-5, Graphite, processes 244129-80-4, Manganese nickel hydroxide Mn0.5Ni0.5(OH)2  
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)  
 (layered electrodes for lithium cells and batteries)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 21324-40-3, Lithium hexafluorophosphate  
 RL: DEV (Device component use); USES (Uses)  
 (layered electrodes for lithium cells and batteries)

IT 12031-65-1P, Lithium nickel oxide linio<sub>2</sub> 12162-79-7P, Lithium manganese oxide limno<sub>2</sub> 12190-79-3P, Cobalt lithium oxide colio<sub>2</sub> 13824-63-0P, Cobalt lithium phosphate colipo<sub>4</sub> 13826-59-0P, Lithium manganese phosphate limnpo<sub>4</sub> 15365-14-7P, Iron lithium phosphate felipo<sub>4</sub> 128975-24-6DP, Lithium manganese nickel oxide LiMn0.5Ni0.5O<sub>2</sub>, Li intercalated 128975-24-6P, Lithium manganese nickel oxide LiMn0.5Ni0.5O<sub>2</sub> 176087-62-0P, Lithium manganese oxide Li1-1.33Mn1.67-204 193214-24-3P, Aluminum cobalt lithium nickel oxide Al0.05Co0.15LiNi0.8O<sub>2</sub> 309242-27-1P, Cobalt lithium magnesium nickel titanium oxide Co0.15LiMg0.05Ni0.75Ti0.05O<sub>2</sub> 346417-97-8P, Cobalt lithium manganese nickel oxide Co0.33LiMn0.33Ni0.33O<sub>2</sub> 448897-02-7DP, Lithium manganese nickel titanium oxide Li1.02Mn0.46Ni0.46Ti0.05O<sub>2</sub>, Li intercalated 448897-02-7P, Lithium manganese nickel titanium oxide Li1.02Mn0.46Ni0.46Ti0.05O<sub>2</sub> 602319-07-3P, Lithium manganese nickel titanium oxide (Li<sub>2</sub>.02Mn0.46Ni0.46Ti0.05O<sub>2</sub>)  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (layered electrodes for lithium cells and batteries)

IT 7664-41-7, Ammonia, processes  
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)  
 (lithium solution; layered electrodes for lithium cells and batteries)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L75 ANSWER 27 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2003:219342 HCAPLUS Full-text  
 DOCUMENT NUMBER: 138:257830  
 TITLE: Cathode active mass and secondary lithium battery  
 INVENTOR(S): Takeuchi, Hajime; Endo, Shota; Amanomiya, Kazuki; Tanaka, Hiromasa; Sakai, Akira; Shirakawa, Yasuhiro; Oya, Yasumasa  
 PATENT ASSIGNEE(S): Toshiba Corp., Japan; Toshiba Electronic Engineering Corp.  
 SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

## PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003086181	A	20030320	JP 2001-275080	
				2001 0911
<--				
PRIORITY APPLN. INFO.:		JP 2001-275080		
		2001 0911		
<--				

ED Entered STN: 20 Mar 2003

AB The active mass comprises a hexagonal structured oxide:  $LixCo_{1-y}M_yO_2$  or  $LixCo_{1-y}M'_yO_2-y$  ( $M$  is  $\geq 1$  metal element having ion radius larger than  $Co^{3+}$  and average valence of 3;  $M'$  is  $\geq 1$  metal element having ion radius larger than  $Co^{3+}$  and average valence of 2;  $x = 0.4-2.0$ ;  $0 < y \leq 0.2$ ). The battery has a cathode containing the above described active mass, an anode, a separator between the 2 electrodes in a battery case, and an electrolyte filled inside the battery case.

IT S02616~40~2, Cobalt lithium magnesium titanium oxide

(Co0.8LiMg0.1Ti0.1O2) S02616~41~3, Calcium cobalt lithium zirconium oxide (Ca0.1Co0.8LiZr0.1O2)

S02616~42~4, Cobalt hafnium lithium magnesium oxide (Co0.8Hf0.1LiMg0.1O2)

RL: DEV (Device component use); USES (Uses)  
(compns. of cathodes containing lithium cobalt composite oxides for secondary lithium batteries)

RN 502616-40-2 HCPLUS

CN Cobalt lithium magnesium titanium oxide (Co0.8LiMg0.1Ti0.1O2) (CA INDEX NAME)

Component	Ratio	Component	
		Registry Number	
O	2		17778-80-2
Co	0.8		7440-48-4
Ti	0.1		7440-32-6
Mg	0.1		7439-95-4
Li	1		7439-93-2

RN 502616-41-3 HCPLUS

CN Calcium cobalt lithium zirconium oxide (Ca0.1Co0.8LiZr0.1O2) (CA INDEX NAME)

Component	Ratio	Component	
		Registry Number	
O	2		17778-80-2
Ca	0.1		7440-70-2
Zr	0.1		7440-67-7
Co	0.8		7440-48-4
Li	1		7439-93-2

RN 502616-42-4 HCPLUS

CN Cobalt hafnium lithium magnesium oxide (Co0.8Hf0.1LiMg0.1O2) (CA INDEX NAME)

Component	Ratio	Component	
		Registry Number	
O	2		17778-80-2
Hf	0.1		7440-58-6
Co	0.8		7440-48-4

Mg		0.1		7439-95-4
Li		1		7439-93-2
IC	ICM	H01M004-58		
	ICS	H01M010-40		
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology)			
ST	secondary battery cathode			
	lithium cobalt composite oxide compn			
IT	Battery cathodes			
	(compns. of cathodes containing lithium cobalt composite oxides for secondary lithium batteries)			
IT	221332-84-9, Cobalt gallium lithium oxide (Co0.9Ga0.1LiO <sub>2</sub> )			
	502616-36-6, Cobalt lithium magnesium fluoride oxide (Co0.9LiMg0.1F0.1O1.9) 502616-37-7, Cobalt lithium magnesium fluoride oxide (Co0.8LiMg0.2F0.2O1.8) 502616-38-8, Cobalt indium lithium oxide (Co0.8In0.2LiO <sub>2</sub> ) 502616-39-9, Cobalt lithium thallium oxide (Co0.9LiTl0.1O <sub>2</sub> ) 502616-40-2, Cobalt lithium magnesium titanium oxide (Co0.8LiMg0.1TiO1.1O <sub>2</sub> ) 502616-41-3, Calcium cobalt lithium zirconium oxide (Ca0.1Co0.8LiZr0.1O <sub>2</sub> ) 502616-42-4, Cobalt hafnium lithium magnesium oxide (Co0.8Hf0.1LiMg0.1O <sub>2</sub> )			
	RL: DEV (Device component use); USES (Uses)			
	(compns. of cathodes containing lithium cobalt composite oxides for secondary lithium batteries)			

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

L75 ANSWER 28 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2003:173992 HCAPLUS Full-text  
 DOCUMENT NUMBER: 138:224204  
 TITLE: Battery  
 INVENTOR(S): Adachi, Momoe; Fujita, Shigeru; Endo, Takuya;  
 Iwakoshi, Yasunobu; Shibamoto, Goro  
 PATENT ASSIGNEE(S): Sony Corporation, Japan  
 SOURCE: PCT Int. Appl., 162 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2003019713	A1	20030306	WO 2002-JP8498	2002 0823
<--				
W: CN, JP, KR, US				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR				
EP 1443584	A1	20040804	EP 2002-762828	2002 0823
<--				
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR, BG, CZ, EE, SK				
CN 1557036	A	20041222	CN 2002-818384	2002 0823
<--				
CN 1314159	C	20070502		
CN 1770542	A	20060510	CN 2005-10113835	2002 0823

## 10/563,124-324074-EIC SEARCH

CN 100448095	C	20081231	<--	
CN 1770543	A	20060510	CN 2005-10113836	2002 0823
<--				
CN 100446336	C	20081224		
KR 2010004115	A	20100112	KR 2009-724824	2002 0823
<--				
US 20040234853	A1	20041125	US 2004-486635	2004 0211
<--				
US 7510803	B2	20090331	JP 2001-254547	A 2001 0824
<--				
CN 2002-818384	A3		2002 0823	
<--				
WO 2002-JP8498	W		2002 0823	
<--				
KR 2004-702675	A3		2004 0223	
<--				

## ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 07 Mar 2003

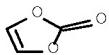
AB The battery has a cathode, containing a Li composite oxide active mass having Li and/or Ni and O, an anode containing a Li intercalating material and/or Li in its active mass, and an electrolyte-impregnated separator in between; where the battery has charging voltage  $\geq$  4.25 V, and a total amount of Li carbonate and Li sulfate is 1.0 mass % of the cathode active mass. Preferably, the electrolyte has the concentration of a proton impurity  $\leq$  20 ppm and water  $\leq$  20 ppm.

IT 872-36-6, Vinylene carbonate  
500868-02-0

RL: DEV (Device component use); USES (Uses)  
(secondary lithium batteries  
containing electrolytes, Li or Li-intercalating  
anodes and Li composite oxide cathodes with  
controlled concentration of Li<sub>2</sub>CO<sub>3</sub> and Li<sub>2</sub>SO<sub>4</sub>)

RN 872-36-6 HCPLUS

CN 1,3-Dioxol-2-one (CA INDEX NAME)



RN 500868-02-0 HCPLUS  
CN Cobalt lithium magnesium nickel titanium oxide  
(Co0.3LiMg0.05Ni0.5Ti0.15O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
<hr/>		
O	2	17778-80-2
Co	0.3	7440-48-4

Ti		0.15		7440-32-6
Ni		0.5		7440-02-0
Mg		0.05		7439-95-4
Li		1		7439-93-2

IC ICM H01M010-40  
 ICS H01M004-02; H01M004-58; H01M004-40; H01M004-38  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST secondary lithium battery structure  
 high charging voltage energy d  
 IT Secondary batteries  
     (lithium; secondary lithium  
     batteries containing electrolytes, Li or  
     Li-intercalating anodes and Li composite oxide  
     cathodes with controlled concentration of Li<sub>2</sub>CO<sub>3</sub> and Li<sub>2</sub>SO<sub>4</sub>)  
 IT 7439-93-2, Lithium, uses 7782-42-5, Graphite, uses 12668-36-9  
 RL: DEV (Device component use); USES (Uses)  
     (anode; secondary lithium  
     batteries containing electrolytes, Li or  
     Li-intercalating anodes and Li composite oxide  
     cathodes with controlled concentration of Li<sub>2</sub>CO<sub>3</sub> and Li<sub>2</sub>SO<sub>4</sub>)  
 IT 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>)  
 RL: DEV (Device component use); USES (Uses)  
     (cathode; secondary lithium  
     batteries containing electrolytes, Li or  
     Li-intercalating anodes and Li composite oxide  
     cathodes with controlled concentration of Li<sub>2</sub>CO<sub>3</sub> and Li<sub>2</sub>SO<sub>4</sub>)  
 IT 7791-03-9, Lithium perchlorate 14283-07-9, Lithium  
 tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate  
 90076-65-6 132843-44-8  
 RL: DEV (Device component use); USES (Uses)  
     (electrolyte; secondary lithium  
     batteries containing electrolytes, Li or  
     Li-intercalating anodes and Li composite oxide  
     cathodes with controlled concentration of Li<sub>2</sub>CO<sub>3</sub> and Li<sub>2</sub>SO<sub>4</sub>)  
 IT 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate  
 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate  
 872-36-6, Vinylene carbonate  
 4427-96-7, Vinyl ethylene carbonate 12031-65-1, Lithium nickel  
 oxide (LiNiO<sub>2</sub>) 113066-92-5, Cobalt lithium nickel oxide  
 (Co0.9LiNi0.1O<sub>2</sub>) 118557-79-2, Cobalt iron lithium oxide (Co0.9Fe  
 0.1LiO<sub>2</sub>) 128975-24-6, Lithium manganese nickel oxide  
 (LiMn0.5Ni0.5O<sub>2</sub>) 185746-84-3, Aluminum lithium magnesium nickel  
 oxide (Al0.05LiMg0.05Ni0.9O<sub>2</sub>) 202916-35-6, Chromium cobalt  
 lithium nickel oxide (Cr0.05Co0.2LiNi0.75O<sub>2</sub>) 287718-97-2,  
 Aluminum lithium manganese nickel oxide (Al0.05LiMn0.05Ni0.9O<sub>2</sub>)  
 346417-97-8, Cobalt lithium manganese nickel oxide  
 (Co0.33LiMn0.33Ni0.33O<sub>2</sub>) 364589-12-8, Aluminum cobalt lithium  
 titanium oxide (Al0.05Co0.9LiTi0.05O<sub>2</sub>) 475637-37-7, Aluminum  
 cobalt lithium nickel oxide (Al0.05Co0.8LiNi0.15O<sub>2</sub>) 478814-69-6,  
 Aluminum cobalt lithium magnesium oxide (Al0.05Co0.9LiMg0.05O<sub>2</sub>)  
 500867-92-5, Cobalt lithium magnesium manganese oxide  
 (Co0.8LiMg0.05Mn0.15O<sub>2</sub>) 500867-93-6, Aluminum iron lithium  
 nickel oxide (Al0.15Fe0.05LiNi0.8O<sub>2</sub>) 500867-94-7, Aluminum  
 cobalt lithium nickel oxide (Al0.2Co0.3LiNi0.5O<sub>2</sub>) 500867-98-1,  
 Cobalt lithium magnesium nickel oxide (Co0.45LiMg0.05Ni0.5O<sub>2</sub>)  
 500867-99-2, Cobalt lithium nickel titanium oxide  
 (Co0.35LiNi0.6Ti0.05O<sub>2</sub>) 500868-00-8, Cobalt iron lithium nickel  
 oxide (Co0.25Fe0.1LiNi0.65O<sub>2</sub>) 500868-01-9 500868-02-0  
 500868-03-1 500868-04-2 500868-05-3 500868-09-7  
 500868-10-0 500868-11-1 500868-12-2  
 RL: DEV (Device component use); USES (Uses)  
     (secondary lithium batteries  
     containing electrolytes, Li or Li-intercalating  
     anodes and Li composite oxide cathodes with  
     controlled concentration of Li<sub>2</sub>CO<sub>3</sub> and Li<sub>2</sub>SO<sub>4</sub>)

## 10/563,124-324074-EIC SEARCH

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)  
 REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L75 ANSWER 29 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2003:116804 HCAPLUS Full-text  
 DOCUMENT NUMBER: 138:173308  
 TITLE: Electrode-active material for lithium secondary battery  
 INVENTOR(S): Ishida, Yuko; Okahara, Kenji  
 PATENT ASSIGNEE(S): Mitsubishi Chemical Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003045424	A	20030214	JP 2001-227003	
				2001
				0727

PRIORITY APPLN. INFO.: <-- JP 2001-227003  
 2001  
 0727

ED Entered STN: 14 Feb 2003  
 AB The electrode-active material comprises components A, B, and C, where A is a layer composite oxide of  $\geq 2$  of Li and transition metals (such as Ni, Mn, and Co); B is a carbonaceous material with BET sp. surface area (SSAB) 50-2000 m<sup>2</sup>/g; and C is a binder. Preferably, the composite oxide has a BET sp. surface area (SSAA) of 0.1-10 m<sup>2</sup>/g;  $25 \leq (\text{SSAB})/(\text{SSAA})^{1/2} \leq 900$ . A can be represented by  $\text{Li}_v\text{Ni}_w\text{Mn}_x\text{Co}_y\text{O}_z$ , where  $0.8 \leq v \leq 1.2$ ,  $0 \leq w, x, y \leq 2$ ,  $0 \leq z \leq 0.3$ ,  $0.8 \leq w + x + y + z \leq 1.2$ , Q = Be, B, Mg, Al, Ca, Sc, Ti, V, Cr, Fe, Cu, Zn, or Ga. Preferably,  $0.7 \leq w/x \leq 9$ ; and the electrode-active material comprises A 10-99, B 0.01-50, and C 0.1-80 weight%. The battery comprises pos. electrode, neg. electrode, and electrolyte.

IT 496861-40-6P  
 RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (electrode-active material containing; electrode-active material for lithium secondary battery)

RN 496861-40-6 HCAPLUS

CN Aluminum beryllium boron calcium chromium copper gallium iron lithium magnesium manganese nickel scandium titanium vanadium zinc oxide ((Al,Be,B,Ca,Cr,Cu,Ga,Fe,Mg,Sc,Ti,V,Zn)0.3(Co,Mn,Ni)1.2 Li0.8-1.2O2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Ca	0 - 0.3	7440-70-2
Zn	0 - 0.3	7440-66-6
V	0 - 0.3	7440-62-2
Ga	0 - 0.3	7440-55-3
Cu	0 - 0.3	7440-50-8
Co	0 - 1.2	7440-48-4
Cr	0 - 0.3	7440-47-3
B	0 - 0.3	7440-42-8

Be		0 - 0.3		7440-41-7
Ti		0 - 0.3		7440-32-6
Sc		0 - 0.3		7440-20-2
Ni		0 - 1.2		7440-02-0
Mn		0 - 1.2		7439-96-5
Mg		0 - 0.3		7439-95-4
Li		0.8 - 1.2		7439-93-2
Fe		0 - 0.3		7439-89-6
Al		0 - 0.3		7429-90-5

IT 105-58-8, Diethyl carbonate

RL: TEM (Technical or engineered material use); USES (Uses)  
(electrolyte containing; for manufacture of lithium  
secondary battery)

RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (CA INDEX NAME)



IC ICM H01M004-58

ICS H01M004-02; H01M004-62; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 45, 57, 76

ST electrode active material coating

lithium secondary battery; lithium  
 nickel manganese cobalt oxide electrode active  
 material; acetylene black polyvinylidene fluoride  
 electrode active material;  
 tetrafluoroethylene graphite Ketjen Black EC electrode  
 active material; ethylene carbonate  
 diethyl carbonate electrolyte  
 battery; lithium hexafluorophosphate  
 electrolyte battery

IT Fluoropolymers, uses

RL: NUU (Other use, unclassified); USES (Uses)  
(binder; for manufacture of electrode-active  
material for lithium secondary  
battery)

IT Carbon black, uses

Graphitized carbon black

RL: TEM (Technical or engineered material use); USES (Uses)  
(elec. conducting agent, electrode-active  
material containing; for manufacture of electrode-  
active material for lithium  
secondary battery)

IT Secondary batteries

(lithium; manufacture of electrode-  
 active material for lithium  
 secondary battery)

IT Coating materials

Collecting apparatus

Electrodes  
 (manufacture of electrode-active  
 material for lithium secondary  
 battery)

IT 872-50-4, N-Methylpyrrolidone, uses

RL: NUU (Other use, unclassified); USES (Uses)  
(additive; for manufacture of electrode-active  
material for lithium secondary  
battery)

IT 116-14-3, Tetrafluoroethylene, uses 24937-79-9, Polyvinylidene

- fluoride  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (binder; for manufacture of electrode-active material for lithium secondary battery)
- IT 128975-24-6P, Lithium manganese nickel oxide ( $\text{Li}_2\text{MnNiO}_4$ )  
 496861-40-6P  
 RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (electrode-active material containing; electrode-active material for lithium secondary battery)
- IT 346417-97-8P, Cobalt lithium manganese nickel oxide ( $\text{Co}_{0.33}\text{LiMn}_{0.33}\text{Ni}_{0.33}\text{O}_2$ )  
 RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (electrode-active material containing; for manufacture of electrode-active material for lithium secondary battery)
- IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 21324-40-3, Lithium hexafluorophosphate ( $\text{LiPF}_6$ )  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (electrolyte containing; for manufacture of lithium secondary battery)
- IT 7782-42-5P, Graphite, uses  
 RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (neg. electrode-active material containing; for manufacture of lithium secondary battery)
- IT 1310-66-3, Lithium hydroxide ( $\text{LiOH}$ ) monohydrate 1317-34-6, Manganese oxide ( $\text{Mn}_2\text{O}_3$ ) 12054-48-7, Nickel hydroxide ( $\text{Ni}(\text{OH})_2$ ) 21041-93-0, Cobalt hydroxide ( $\text{Co}(\text{OH})_2$ )  
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)  
 (starting material; for manufacture of electrode-active material for lithium secondary battery)

L75 ANSWER 30 OF 32 HCPLUS COPYRIGHT 2010 ACS on STN

ACCESSION NUMBER: 2003:116796 HCPLUS Full-text

DOCUMENT NUMBER: 138:156280

TITLE: Electrode-active material coated electrode for lithium secondary battery

INVENTOR(S): Ishida, Yuko; Okahara, Kenji

PATENT ASSIGNEE(S): Mitsubishi Chemical Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2003045414	A	20030214	JP 2001-227002	2001 0727

PRIORITY APPLN. INFO.:		<--	
	JP 2001-227002		
			2001

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ED Entered STN: 14 Feb 2003

AB The surface of the electrode collector is coated with a layer of electrode active material having d. of 2-2.7 g/cm<sup>3</sup> and containing components A, B, and C, where A is a layer composite oxide of ≥2 of Li and transition metals (Ni, Mn, Co, etc...); B is an elec. conducting agent; and C is a binder. A can be represented by Li<sub>v</sub>Ni<sub>w</sub>Mn<sub>x</sub>Co<sub>y</sub>Zn<sub>z</sub>O<sub>2</sub>, where 0.8 ≤ v ≤ 1.2, 0 ≤ w, x, and y ≤ 2, 0 ≤ z ≤ 0.3, 0.8 ≤ w + x + y + z ≤ 1.2, Q = Be, B, Mg, Al, Ca, Sc, Ti, V, Cr, Fe, Cu, Zn, or Ga. Preferably, 0.7 ≤ w/x ≤ 9; and the electrode active material comprises A 10-99, B 0.01-50, and C 0.1-80 weight%. The battery comprises pos. electrode, neg. electrode, and electrolyte.

IT 496861-40-6P

RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (electrode-active material  
 containing; electrode-active material  
 coated electrode for lithium  
 secondary battery)

RN 496861-40-6 HCAPLUS

CN Aluminum beryllium boron calcium chromium copper gallium iron lithium magnesium manganese nickel scandium titanium vanadium zinc oxide ((Al,Be,B,Ca,Cr,Cu,Ga,Fe,Mg,Sc,Ti,V,Zn)0.3(Co,Mn,Ni)1.2 Li<sub>0.8-1.2</sub>O<sub>2</sub>) (9CI) (CA INDEX NAME)

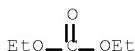
Component	Ratio	Component Registry Number
O	2	17778-80-2
Ca	0 - 0.3	7440-70-2
Zn	0 - 0.3	7440-66-6
V	0 - 0.3	7440-62-2
Ga	0 - 0.3	7440-55-3
Cu	0 - 0.3	7440-50-8
Co	0 - 1.2	7440-48-4
Cr	0 - 0.3	7440-47-3
B	0 - 0.3	7440-42-8
Be	0 - 0.3	7440-41-7
Ti	0 - 0.3	7440-32-6
Sc	0 - 0.3	7440-20-2
Ni	0 - 1.2	7440-02-0
Mn	0 - 1.2	7439-96-5
Mg	0 - 0.3	7439-95-4
Li	0.8 - 1.2	7439-93-2
Fe	0 - 0.3	7439-89-6
Al	0 - 0.3	7429-90-5

IT 105-58-8, Diethyl carbonate

RL: TEM (Technical or engineered material use); USES (Uses)  
 (electrolyte containing; for manufacture of lithium  
 secondary battery)

RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (CA INDEX NAME)



IC ICM H01M004-02

ICS C01G053-00; H01M004-58; H01M004-62; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 45, 57, 76

ST electrode active material coating

- lithium secondary battery; lithium  
 nickel manganese cobalt oxide electrode active  
 material; acetylene black polyvinylidene fluoride  
 electrode active material; ethylene  
 carbonate diethyl carbonate  
 electrolyte battery; lithium  
 hexafluorophosphate electrolyte battery
- IT Fluoropolymers, uses  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (binder; for manufacture of electrode-active  
 material coated electrode for lithium  
 secondary battery)
- IT Carbon black, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (elec. conducting agent, electrode-active  
 material containing; for manufacture of electrode-  
 active material coated electrode  
 for lithium secondary battery)
- IT Coating materials  
 Collecting apparatus  
 Electrodes  
 (electrode-active material coated  
 electrode for lithium secondary  
 battery)
- IT Secondary batteries  
 (lithium; electrode-active  
 material coated electrode for lithium  
 secondary battery)
- IT 872-50-4, N-Methylpyrrolidone, uses  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (additive; for manufacture of electrode-active  
 material coated electrode for lithium  
 secondary battery)
- IT 24937-79-9, Polyvinylidene fluoride  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (binder; for manufacture of electrode-active  
 material coated electrode for lithium  
 secondary battery)
- IT 405890-05-3P, Cobalt lithium manganese nickel oxide  
 (Co0.1LiMn0.45Ni0.45O2) 496861-40-6P  
 RL: PNU (Preparation, unclassified); TEM (Technical or engineered  
 material use); PREP (Preparation); USES (Uses)  
 (electrode-active material  
 containing; electrode-active material  
 coated electrode for lithium  
 secondary battery)
- IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl  
 carbonate 21324-40-3, Lithium hexafluorophosphate  
 (LiPF6)  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (electrolyte containing; for manufacture of lithium  
 secondary battery)
- IT 1310-66-3, Lithium hydroxide (LiOH) monohydrate 1317-34-6,  
 Manganese oxide (Mn2O3) 12054-48-7, Nickel hydroxide (Ni(OH)2)  
 21041-93-0, Cobalt hydroxide (Co(OH)2)  
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical  
 process); TEM (Technical or engineered material use); PROC  
 (Process); USES (Uses)  
 (starting material; for manufacture of electrode-  
 active material coated electrode  
 for lithium secondary battery)

L75 ANSWER 31 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2002:752479 HCAPLUS Full-text  
 DOCUMENT NUMBER: 137:281841  
 TITLE: Cathode active  
 material for nonaqueous

10/563,124-324074-EIC SEARCH

electrolyte secondary  
battery  
INVENTOR(S): Morishima, Hideaki; Yamada, Shuji; Kanai,  
Hideyuki  
PATENT ASSIGNEE(S): Kabushiki Kaisha Toshiba, Japan  
SOURCE: Eur. Pat. Appl., 29 pp.  
CODEN: EPXXDW  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1246290	A2	20021002	EP 2002-252168	2002 0326
EP 1246290	A3	20031119		<--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
CA 2378278	A1	20020926	CA 2002-2378278	2002 0322
CA 2378278	C	20081118		<--
US 20030054253	A1	20030320	US 2002-102705	2002 0322
US 6984470	B2	20060110		<--
JP 2002358965	A	20021213	JP 2002-87051	2002 0326
JP 3615196	B2	20050126		<--
US 20060029865	A1	20060209	US 2005-244042	2005 1006
US 7642014	B2	20100105		<--
PRIORITY APPLN. INFO.:			JP 2001-87038	A
				2001 0326
			US 2002-102705	A3
				2002 0322
				<--

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 04 Oct 2002

AB The present invention provides a pos. electrode active material containing a lithium-containing composite metal oxide having a composition represented by: LiMgxM1-xPO4 where M is at least one kind of an element selected from the group consisting of Co and Ni, and the molar ratio x is larger than 0.5 and smaller than 0.75, i.e., 0.5 < x < 0.75.

IT 464172-20-1P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(cathode active material for  
nonaq. electrolyte secondary  
battery)

RN 464172-20-1 HCPLUS

CN Cobalt lithium magnesium titanium oxide phosphate  
(Co0.9LiMg0.05Ti0.10O2(PO4)0.95) (CA INDEX NAME)

## 10/563,124-324074-EIC SEARCH

Component	Ratio	Component Registry Number
O	0.2	17778-80-2
O4P	0.95	14265-44-2
Co	0.9	7440-48-4
Ti	0.1	7440-32-6
Mg	0.05	7439-95-4
Li	1	7439-93-2
IC	ICM H01M010-40	
	ICS H01M004-58	
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology)	
ST	Lithium battery cathode active material	
IT	Battery cathodes (cathode active material for nonaq. electrolyte secondary battery)	
IT	Secondary batteries (lithium; cathode active material for nonaq. electrolyte secondary battery)	
IT	464171-95-7P, Cobalt lithium magnesium phosphate (Co0.45LiMg0.55(PO4)) 464171-96-8P, Cobalt lithium magnesium phosphate (Co0.3LiMg0.7(PO4)) 464171-97-9P, Lithium magnesium nickel phosphate (LiMg0.55Ni0.45(PO4)) 464171-98-0P, Lithium magnesium nickel phosphate (LiMg0.7Ni0.3(PO4)) 464171-99-1P, Cobalt lithium magnesium phosphate (Co0.85Li1.1Mg0.05(PO4)) 464172-00-7P, Lithium magnesium nickel phosphate (Li1.1Mg0.05Ni0.85(PO4)) 464172-01-8P, Cobalt lithium titanium phosphate (Co0.85Li1.1Ti0.05(PO4)) 464172-02-9P, Lithium nickel titanium phosphate (Li1.1Ni0.85Ti0.05(PO4)) 464172-03-0P, Cobalt lithium vanadium phosphate (Co0.85Li1.1V0.05(PO4)) 464172-04-1P, Lithium nickel vanadium phosphate (Li1.1Ni0.85V0.05(PO4)) 464172-05-2P, Chromium cobalt lithium phosphate (Cr0.05Co0.85Li1.1(PO4)) 464172-06-3P, Chromium lithium nickel phosphate (Cr0.05Li1.1Ni0.85(PO4)) 464172-07-4P, Cobalt lithium manganese phosphate (Co0.85Li1.1Mn0.05(PO4)) 464172-08-5P, Lithium manganese nickel phosphate (Li1.1Mn0.05Ni0.85(PO4)) 464172-09-6P, Cobalt iron lithium phosphate (Co0.85Fe0.05Li1.1(PO4)) 464172-10-9P, Iron lithium nickel phosphate (Fe0.05Li1.1Ni0.85(PO4)) 464172-11-0P, Cobalt copper lithium phosphate (Co0.85Cu0.05Li1.1(PO4)) 464172-12-1P, Copper lithium nickel phosphate (Cu0.05Li1.1Ni0.85(PO4)) 464172-13-2P, Cobalt lithium zirconium phosphate (Co0.85Li1.1Zr0.05(PO4)) 464172-14-3P, Lithium nickel zirconium phosphate (Li1.1Ni0.85Zr0.05(PO4)) 464172-16-5P, Aluminum cobalt lithium phosphate (Al0.05Co0.85Li1.1(PO4)) 464172-17-6P, Aluminum lithium nickel phosphate (Al0.05Li1.1Ni0.85(PO4)) 464172-18-7P 464172-19-8P 464172-20-1P 464172-21-2P 464172-22-3P 464172-23-4P 464172-24-5P 464172-25-6P 464172-26-7P 464172-27-8P 464172-28-9P 464172-29-0P 464172-30-3P 464172-31-4P 464172-32-5P 464172-33-6P 464172-34-7P 464172-35-8P 464172-36-9P 464172-37-0P 464172-38-1P 464172-39-2P 464172-40-5P 464172-41-6P 464172-42-7P 464172-43-8P 464172-44-9P 464172-45-0P 464172-46-1P 464172-47-2P 464172-48-3P 464172-49-4P 464172-50-7P 464172-51-8P 464172-52-9P 464172-53-0P 464172-54-1P 464172-55-2P 464172-56-3P 464172-57-4P 464172-58-5P 464172-59-6P, Cobalt lithium magnesium phosphate (Co0.94Li1.01Mg0.05(PO4)) 464172-60-9P, Cobalt lithium magnesium phosphate (Co0.93Li1.02Mg0.05(PO4)) 464172-61-0P, Cobalt lithium magnesium phosphate (Co0.75Li1.2Mg0.05(PO4)) 464172-62-1P, Cobalt lithium magnesium phosphate (Co0.7Li1.25Mg0.05(PO4)) 464172-63-2P 464172-64-3P 464172-65-4P 464172-66-5P 464172-67-6P 464172-68-7P 464172-69-8P 464173-33-9P	

## 10/563,124-324074-EIC SEARCH

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (cathode active material for  
 nonaq. electrolyte secondary  
 battery)

OS.CITING REF COUNT: 3 THERE ARE 3 CAPLUS RECORDS THAT CITE  
 THIS RECORD (4 CITINGS)  
 REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L75 ANSWER 32 OF 32 HCAPLUS COPYRIGHT 2010 ACS on STN  
 ACCESSION NUMBER: 2002:372947 HCAPLUS Full-text  
 DOCUMENT NUMBER: 137:297251  
 TITLE: A comparison of the electrode/  
 electrolyte reaction at elevated  
 temperatures for various Li-ion  
 battery cathodes  
 AUTHOR(S): MacNeil, D. D.; Lu, Zhonghua; Chen, Zhaohui;  
 Dahn, J. R.  
 CORPORATE SOURCE: Department of Chemistry, Dalhousie University,  
 Halifax, NS, B3H 3J5, Can.  
 SOURCE: Journal of Power Sources (2002),  
 108(1-2), 8-14  
 CODEN: JPSODZ; ISSN: 0378-7753  
 PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 20 May 2002

AB Differential scanning calorimetry (DSC) was used to compare the thermal stability of charged cathodes in 1 M LiPF<sub>6</sub> EC/ DEC electrolyte. Seven possible cathode materials for lithium-ion batteries (LiCoO<sub>2</sub>, LiNiO<sub>2</sub>, LiNi<sub>0.8</sub>Co<sub>0.2</sub>O<sub>2</sub>, Li<sub>1+x</sub>Mn<sub>2-x</sub>O<sub>4</sub>, LiNi<sub>0.7</sub>Co<sub>0.2</sub>Ti<sub>0.05</sub>Mg<sub>0.05</sub>O<sub>2</sub>, Li[Ni<sub>3/8</sub>Co<sub>1/4</sub>Mn<sub>3/8</sub>]O<sub>2</sub>, and LiFePO<sub>4</sub>) were tested under the same conditions. Welded stainless steel DSC sample tubes, that ensured no weight loss during anal., were used for these measurements, making them reliable. A consideration of these DSC results and the known electrochem. properties of the cathodes may assist the selection of the most suitable lithium-ion cathode material for use in a particular application.

IT 221689-64-1

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)  
 (comparison of the electrode/electrolyte  
 reaction at elevated temps. for various Li-ion battery  
 cathodes)

RN 221689-64-1 HCAPLUS

CN Cobalt lithium magnesium nickel titanium oxide  
 (Co<sub>0.2</sub>LiMg<sub>0.05</sub>Ni<sub>0.7</sub>Ti<sub>0.05</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.2	7440-48-4
Ti	0.05	7440-32-6
Ni	0.7	7440-02-0
Mg	0.05	7439-95-4
Li	1	7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST battery cathode selection electrode  
 electrolyte reaction

IT Battery cathodes

(comparison of the electrode/electrolyte  
 reaction at elevated temps. for various Li-ion battery  
 cathodes)

IT 12031-65-1, Lithium nickel oxide LiNiO<sub>2</sub> 12057-17-9, Lithium

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manganese oxide (LiMn<sub>2</sub>O<sub>4</sub>) 12190-79-3, Cobalt lithium oxide LiCoO<sub>2</sub> 15365-14-7, Iron lithium phosphate LiFePO<sub>4</sub> 113066-89-0, Cobalt lithium nickel oxide (Co<sub>0.2</sub>LiNi<sub>0.8</sub>O<sub>2</sub>) 221689-64-1 468772-63-6, Cobalt lithium manganese nickel oxide (Co<sub>0.25</sub>LiMn<sub>0.38</sub>Ni<sub>0.38</sub>O<sub>2</sub>)

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)

(comparison of the electrode/electrolyte reaction at elevated temps. for various Li-ion battery cathodes)

OS.CITING REF COUNT: 88 THERE ARE 88 CAPLUS RECORDS THAT CITE THIS RECORD (88 CITINGS)

REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

FULL SEARCH HISTORY

=> d his nofile

(FILE 'HOME' ENTERED AT 12:30:54 ON 08 MAR 2010)

FILE 'HCAPLUS' ENTERED AT 12:31:00 ON 08 MAR 2010

E US20060166096/PN

L1 1 SEA SPE=ON ABB=ON PLU=ON US20060166096/PN  
 D ALL  
 D SCA  
 SEL RN

FILE 'REGISTRY' ENTERED AT 12:32:06 ON 08 MAR 2010

L2 7 SEA SPE=ON ABB=ON PLU=ON (105-58-8/BI OR 21324-40-3/  
 BI OR 433304-54-2/BI OR 642999-33-5/BI OR 77-77-0/BI  
 OR 872-36-6/BI OR 96-49-1/BI)  
 D SCA

L3 8586 SEA SPE=ON ABB=ON PLU=ON (LI(L)CO(L)O)/ELS  
 L4 QUE SPE=ON ABB=ON PLU=ON A2/PG  
 L5 QUE SPE=ON ABB=ON PLU=ON B4/PG  
 L6 118 SEA SPE=ON ABB=ON PLU=ON L3 AND L4 AND L5  
 L7 1 SEA SPE=ON ABB=ON PLU=ON L2 AND L6  
 D SCA

L8 24 SEA SPE=ON ABB=ON PLU=ON L6 AND 5/ELC.SUB  
 SAV TEMP L6 HAN124REG/A  
 SAV TEMP L8 HAN124REGA/A

L9 31 SEA SPE=ON ABB=ON PLU=ON L6 AND MG/ELS AND ZR/ELS  
 SAV TEMP L9 HAN124REGB/A

L10 1 SEA SPE=ON ABB=ON PLU=ON L2 AND L9  
 D SCA

L11 1 SEA SPE=ON ABB=ON PLU=ON 872-36-6/RN

D SCA

L12 1 SEA SPE=ON ABB=ON PLU=ON 77-77-0/RN  
 D SCA  
 D CN  
 E "1,4-BUTANEDIOL DIMETHANESULFONATE"/CN  
 E "1,4-BUTANEDIOLDIMETHANESULFONATE"/CN  
 E "1,4-BUTANEDIOL"/CN

L13 1 SEA SPE=ON ABB=ON PLU=ON "1,4-BUTANEDIOL"/CN  
 D SCA  
 D

L14 22237 SEA SPE=ON ABB=ON PLU=ON 110-63-4/CRN  
 E DIMEHTANESULFONATE/CN  
 E DIMEHTANE SULFONATE/CN  
 E BUTANEDIOLDIMETHANESULFONATE/CN  
 E BUTANEDIOL DIMETHANESULFONATE/CN  
 E C6H14O6S2/MF

L15 35 SEA SPE=ON ABB=ON PLU=ON C6H14O6S2/MF  
 D SCA  
 E "1,4-BUTANEDIOL, 1,4-DIMETHANESULFONATE"/CN

L16 1 SEA SPE=ON ABB=ON PLU=ON "1,4-BUTANEDIOL, 1,4-DIMETH  
 ANESULFONATE"/CN  
 D SCA  
 D CN

FILE 'HCAPLUS' ENTERED AT 12:53:24 ON 08 MAR 2010

D SCA L1

L17 32059 SEA SPE=ON ABB=ON PLU=ON BATTERY(3A) ELECTROLYTE

L18 54 SEA SPE=ON ABB=ON PLU=ON L9  
 D QUE

L19 54 SEA SPE=ON ABB=ON PLU=ON L3 AND L18

L20 98972 SEA SPE=ON ABB=ON PLU=ON BATTERY(3A) (SECONDARY OR  
 LITHIUM)

L21 50 SEA SPE=ON ABB=ON PLU=ON L20 AND L18

L22 123 SEA SPE=ON ABB=ON PLU=ON L6

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L23      52 SEA SPE=ON ABB=ON PLU=ON L22 AND L17
L24      1602 SEA SPE=ON ABB=ON PLU=ON L11

FILE 'REGISTRY' ENTERED AT 12:57:13 ON 08 MAR 2010
SET SMARTSELECT ON
L25      SEL PLU=ON L11 1- NAME :      5 TERMS
SET SMARTSELECT OFF

FILE 'HCAPLUS' ENTERED AT 12:57:13 ON 08 MAR 2010
L26      1977 SEA SPE=ON ABB=ON PLU=ON L25
L27      2059 SEA SPE=ON ABB=ON PLU=ON L24 OR L26
L28      15 SEA SPE=ON ABB=ON PLU=ON L27 AND L23
L29      1165 SEA SPE=ON ABB=ON PLU=ON L12

FILE 'REGISTRY' ENTERED AT 12:58:27 ON 08 MAR 2010
SET SMARTSELECT ON
L30      SEL PLU=ON L12 1- NAME :      8 TERMS
SET SMARTSELECT OFF

FILE 'HCAPLUS' ENTERED AT 12:58:27 ON 08 MAR 2010
L31      3551 SEA SPE=ON ABB=ON PLU=ON L30
L32      3947 SEA SPE=ON ABB=ON PLU=ON L29 OR L31
L33      2849 SEA SPE=ON ABB=ON PLU=ON L16

FILE 'REGISTRY' ENTERED AT 12:58:53 ON 08 MAR 2010
SET SMARTSELECT ON
L34      SEL PLU=ON L16 1- NAME :      37 TERMS
SET SMARTSELECT OFF

FILE 'HCAPLUS' ENTERED AT 12:58:54 ON 08 MAR 2010
L35      3059 SEA SPE=ON ABB=ON PLU=ON L34
L36      3428 SEA SPE=ON ABB=ON PLU=ON L33 OR L35
D QUE L22
L37      1 SEA SPE=ON ABB=ON PLU=ON L22 AND (L36 OR L32)
L38      17 SEA SPE=ON ABB=ON PLU=ON L22 AND L27

FILE 'REGISTRY' ENTERED AT 13:08:55 ON 08 MAR 2010
L39      1 SEA SPE=ON ABB=ON PLU=ON 105-58-8/RN
D SCA
D CN

FILE 'HCAPLUS' ENTERED AT 13:09:46 ON 08 MAR 2010
L40      7146 SEA SPE=ON ABB=ON PLU=ON L39

FILE 'REGISTRY' ENTERED AT 13:10:01 ON 08 MAR 2010
SET SMARTSELECT ON
L41      SEL PLU=ON L39 1- NAME :      9 TERMS
SET SMARTSELECT OFF

FILE 'HCAPLUS' ENTERED AT 13:10:01 ON 08 MAR 2010
L42      40945 SEA SPE=ON ABB=ON PLU=ON L41
L43      41939 SEA SPE=ON ABB=ON PLU=ON L40 OR L42
L44      20 SEA SPE=ON ABB=ON PLU=ON L22 AND L43
L45      1 SEA SPE=ON ABB=ON PLU=ON L22 AND L32
L46      0 SEA SPE=ON ABB=ON PLU=ON L22 AND L36
D QUE L28
L47      56 SEA SPE=ON ABB=ON PLU=ON L23 OR L28 OR L37 OR L38
OR (L44 OR L45 OR L46)
L48      36 SEA SPE=ON ABB=ON PLU=ON L47 AND L18
L49      QUE SPE=ON ABB=ON PLU=ON PY=<2005 NOT P/DT
L50      QUE SPE=ON ABB=ON PLU=ON (PY=<2005 OR PRY=<2005 OR
AY=<2005 OR MY=<2005 OR REVIEW/DT) AND P/DT
L51      32 SEA SPE=ON ABB=ON PLU=ON L47 AND (L49 OR L50)
L52      QUE SPE=ON ABB=ON PLU=ON BATTER? OR (ELECTROCHEM?
OR ELECTROLY? OR GALVAN? OR WET OR DRY OR PRIMARY OR
SECONDARY) (2A) (CELL OR CELLS)
L53      32 SEA SPE=ON ABB=ON PLU=ON L51 AND (L52 OR L20)

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L54           31 SEA SPE=ON ABB=ON PLU=ON L53 AND (ELECTROLYT? OR  
L17)  
 L55           19 SEA SPE=ON ABB=ON PLU=ON L54 AND L18  
 L56           31 SEA SPE=ON ABB=ON PLU=ON L54 OR L55  
 L57           QUE SPE=ON ABB=ON PLU=ON ELECTROD? OR ELECTROD?(2A) (POSITIVE OR NEGATIVE) OR CATHOD? OR ANOD?  
 L58           31 SEA SPE=ON ABB=ON PLU=ON L56 AND L57  
               D SCA L1  
 L59           QUE SPE=ON ABB=ON PLU=ON ACTIVE(3A) (MATERIAL OR SUBSTANCE)  
 L60           QUE SPE=ON ABB=ON PLU=ON NONAQUEOUS OR NON(A)AQUEOUS  
 L61           QUE SPE=ON ABB=ON PLU=ON GROUP (2A) (II OR IV)  
 L62           27 SEA SPE=ON ABB=ON PLU=ON L58 AND (L59 OR L60 OR L61)  
 L63           4 SEA SPE=ON ABB=ON PLU=ON L58 NOT L62  
               D SCA  
 L64           31 SEA SPE=ON ABB=ON PLU=ON L58 OR L62 OR L63  
 L65           QUE SPE=ON ABB=ON PLU=ON ?PERCENT? OR .PERCENT. OR PER(W)CENT? OR PCT? OR RATIO# OR PROPORTION? OR PART  
 L66           QUE SPE=ON ABB=ON PLU=ON MOL OR WEIGHT  
 L67           1 SEA SPE=ON ABB=ON PLU=ON L53 NOT L64  
               D SCA  
 L68           32 SEA SPE=ON ABB=ON PLU=ON L64 OR L67  
 L69           12 SEA SPE=ON ABB=ON PLU=ON L68 AND (L65 OR L66)  
 L70           32 SEA SPE=ON ABB=ON PLU=ON L68 OR L69  
 L71           19 SEA SPE=ON ABB=ON PLU=ON L70 AND L18  
 L72           32 SEA SPE=ON ABB=ON PLU=ON L70 OR L71  
               SAV TEMP L72 HAN124HCP/A  
 L73           QUE SPE=ON ABB=ON PLU=ON VOLT OR VOLTAGE  
 L74           4 SEA SPE=ON ABB=ON PLU=ON L72 AND L73  
               D KWIC  
 L75           32 SEA SPE=ON ABB=ON PLU=ON L72 OR L74  
               SAV TEMP L75 HAN124HCPA/A  
               D QUE L75  
               D L75 1-32 IBIB ED ABS HITSTR HITIND